INDEX

Page

Achlya spp., taxonomy, notes ... 293, 295
Achlyopsis entospora, work of E. de Wildeman ... 295–296
Acid—
amide, percentage in ungerminated kernel of cereals ... 320
cresylic, effect on toxicity of spraying emulsions ... 728
lead arsenate. *See* Lead arsenate.
sulphuric. *See* Sulphuric acid.
Acidity, relation to germination of spores ... 144–146
Aeciospores, *Cronartium ribicola* and *C. occidentale*, biometric data ... 512, 514–515
Age, Sex, and Castration, Effect on Basal Heat Production of Chickens: H. H. Mitchell, L. E. Card, and W. T. Haines ... 945–960
Agricultural Areas, Small, Run-off from: C. E. Ramser ... 797–823
Alfalfa—
Hay, Oats, Corn Silage, and Soy-bean Hay, Net-energy Values: E. B. Forbes, Winfred W. Braman, Max Kriss, J. August Fries, C. D. Jeffries, R. W. Swift, Rowland B. French, and J. V. Maucher, jr ... 785–796
nitrogen content, "true" digestibility ... 54, 57
Rations, Sole Source of Nitrogen, Metabolism of Steers on: Harry W. Titus ... 49–58
water requirement—
effect of season ... 1148–1151, 1154–1155, 1158–1159, 1161–1163
experimental results ... 1102, 1105–1109, 1123–1124, 1126, 1133–1134, 1141, 1143–1145
Allen, Ruth F.: Cytological Study of Orange Leaf Rust, *Puccinia triticina* Physiologic Form 11, on Malakoff Wheat ... 697–714
Allison, F. E.: Effect of Applications of Cyanamid on Nitrate Content of Field Soils ... 657–662
Aluminum, presence in canned cranberries ... 891
Amaranthus—
graecizans. *See* Tumbleweed.
retroflexus. *See* Pigweed.
Amino acid, rice—
determination ... 314–315
nutritive value ... 310
Ammonium sulphate, effect on nitrate content of soils ... 658–662
Anatomy, plant, dissection of floral axis of beet ... 4–7
Ancylis comptana Frohl. *See* Leaf roller, strawberry.
Andersen, Alice M.: Development of the Female Gametophyte and Caryopsis of *Poa pratensis* and *Poa compressa* ... 1001–1018
Andropogon sorghum, water requirement ... 1103–1104
Angoumois Grain Moth—
Dispersion to Wheat Fields: Perez Simmons and George W. Ellington ... 459–471
population per acre ... 470–471
Animal nutrition, nitrogen metabolism of steers on rations containing alfalfa as the sole source of the nitrogen ... 49–58
Animals—
critical temperatures, experimental results ... 554
fasting, respiratory exchange, comparison with animals on feed ... 868–869, 872–877
heat production, effect of external temperature ... 555–557
protection from ascarids ... 129–136, 840–845
Anthelmintic—
for Foxes, Critical Tests of Tetrachlorethylene as: Karl B. Hanson ... 129–136
Properties of Santonin: Jacob E. Shillinger ... 839–845
Anthocyanin—
nontransfer in bean grafting ... 675, 676
pigments in soy beans ... 560–563
Anthracnose, Pigeon Pea: C. M. Tucker ... 589–596
Antipodal cells, development in bluegrass ... 1003
Antiscorbutic. *See* Scurvy.
Apanteles melanoscelus (Ratzeburg)—
Parasite of Gipsy Moth—
Parasitic on Chalcid Flies, New Species: C. F. W. Muesebeck ... 331–333
Parasitism by New Species and New Forms of Ichneumonidae: R. A. Cushman ... 453–458
Aphanomyces euteiches Drech., injury to tomato rootlets ... 287–288
Aphids, Toxicity of Petroleum-oil Emulsions, Relation of Size of Oil Drops: Edward L. Griffin, Charles H. Richardson, and Robert C. Burdette ... 727–738
Aphis—
rumicis L., toxicty of oil emulsions, experiments and results ... 730–737
woolly, cause of swellings on apple stems ... 542–543
Apple—
and Pear Trees, Canker Caused by *Glutinium macrosporum*, n. sp.: S. M. Zeller ... 489–496
burr knots, cause, discussion ... 542–545
canker, fungus causing, description ... 489–490
fruit rot, cause and description ... 495–496
injury by woolly aphis ... 542–543
root germs, initiated points ... 543
rot, cause ... 495
Stem, Vascular System, Relation of Burr-knot Formations: Charles F. Swingle ... 533–544
vascular system, description ... 534–540
Apples, antiscorbutic qualities ... 385, 391
Arabinose, fermentation and fermentation profits ... 90–92
Arsenate. *See* Lead arsenate.
Arsenates—
paraffin-coating effect on fungi, bacteria, and larvæ in soil ... 336–337
use against strawberry leaf roller ... 155–156
Arsenic—
oxide, toxicity on Japanese beetle, experimental results ... 1045
use as insecticide, historical review ... 59–60
Arsenical Compounds, Application to Soil, Cause of Injury to Growing Crops: H. E. Morris and D. B. Swingle ... 59–78
Arsenicals, toxicity to different crops ... 76
Artschwager, Ernst: Development of Flowers and Seed in the Sugar Beet ... 1–25
Ascarids, removal from—
animals, effectiveness of santonin ... 840–845
foxes by tetrachlorethylene ... 129–136
Ascomycetes, heterothallism in ... 1027–1028
Ash, soil, constituents ... 343
Aslander, Alfred: Sulphuric Acid as Weed Spray ... 1065–1091
Asparagine—
determination in corn seedlings ... 650–654
occurrence and importance in plants ... 649, 653
Avena sativa. *See* Oats.

Bacillus radicicola, specificity in bean grafting ... 675, 676
Bacteria—
killing with chloroform, methods and results ... 624–630
kinds in sauerkraut ... 85–86
sauerkraut, previous investigations ... 79–81
soil, action on several substances ... 337–338
specificity in bean grafting ... 675, 676

Page

Bacterial Flora, Sauerkraut, Changes During Fermentation at Low Temperatures: Lillian A. Priem, W. H. Peterson, and E. B. Fred ... 79–95
Bacterins, Preparation, Adaptation of Bactericidal Action of Chloroform: Hubert Bunyea ... 623–630
Baking—
effect on bread mold ... 1020
flour quality, indication of kernel texture ... 242–244
Banana, content of vitamin C, in table ... 391
Barium hydroxide, effect on germination of spores ... 141
Bark beetle. *See* Beetle.
Barley—
efficiency in use of water ... 1164–1165
germination and growth, effects of loose smut on ... 994–1000
infection with loose smut, and disinfectants for ... 993
varieties, susceptibility to loose smut ... 997–1000
water requirement—
effect of season ... 1150–1151,1154, 1158–1159, 1162–1163
experimental results ... 1100, 1119–1120, 1130–1131, 1137–1138, 1144–1146
Basisporium gallarum, spores, germination, stimulation by plant tissues ... 138
Bean, susceptibility to anthracnose ... 595
Beans—
grafting of varieties, effects ... 674–676
injury by arsenicals added to soil ... 71
inoculation experiments ... 444–446
Lima, longevity and grafting ... 674–676
navy, protein, nutritive value, experimental results ... 300, 301
Snap, Transit Disease Caused by *Pythium aphanidermatum*: L. L. Harter and W. A. Whitney ... 443–447
soy. *See* Soy beans.
Beef—
protein—
nutritive value, experimental results ... 300, 301
Value as a Supplement to the Proteins in Certain Vegetable Products: Ralph Hoagland and George G. Snider ... 297–308
Beet—
curly top, organism causing, isolation ... 451
dissection of floral axis ... 4–1
floral axis, anatomy ... 4–7
flower of, description ... 2
Sugar—
embryology, study ... 14–22
Flower and Seed Development: Ernst Artschwager ... 1–25
Leaf Hopper, *Eutettix tenellus* (Baker), Study by Means of a Technic for Use with Homopterous Vectors of Plant Disease: Walter Carter ... 449–451
Beetle—
Bark, Attack in Western Yellow Pine, Relation of Fire Injury to, Preliminary Studies: J. M. Miller and J. E. Patterson ... 597–613
Japanese—
(*Popillia japonica* Newm.), Study of Toxicity of Acid Lead Arsenate on: E. R. Van Leeuwen ... 1043–1047
sprays for, preparation and results of use ... 1043–1044
western pine, damage to timber in Siskiyou burn ... 610
Beetles—
bark—
broods in fire-injured trees ... 606–608
development in fire-damaged trees ... 606–608
effect of burning on infestation ... 611–612
effect of light burning on number ... 611–612
Beets—
sugar—
injury by arsenicals added to soil ... 74
nema, control by mononchs ... 265–286
Beta spp. *See* Beets, sugar.
Birds—
digestion, study ... 759–770
food, passage rate in intestines, review ... 759–762
Blanching, corn, disadvantage ... 431

Blight— Page
chestnut, destruction of forests, replacement of trees ... 631–648
seedling, of corn, cause and injury ... 361–362
Blister rust of white pine, study ... 497–510
Bliss, Chester I.: Oviposition Rate of the Grape Leaf Hoppers ... 847–852
Blossom. *See* False-blossom; Flower.
Blossoming, sugar beet, study ... 1–25
Bluegrass—
caryopsis, development and microchemistry of membranes ... 1011–1015
embryo—
development, study ... 1007–1016
sac, development ... 1004–1007
gametophyte, development ... 1002–1004
germination temperatures ... 1001
Kentucky and Canadian, seed development ... 1001–1018
seed—
cells, changes during development of embryo ... 1003, 1011–1016
insect eggs on ovaries ... 1010–1011
See also Poa spp.
Boars, proportion in pig litters, study results ... 716–720
Bogs, cranberry, moisture and nitrate relation to false-blossom disease ... 44–45
Bolls, cotton, shedding of, relation to flower buds ... 923–925
Bordeaux mixture—
efficiency, dependence on suspension of arsenical in water ... 680–685
Influence of Form and Proportion of Lime used and of Method of Mixing: E. B. Holland, C. O. Dunbar, and G. M. Gilligan ... 677–686
Bots, horse, treatment ... 844
Bouillie bordelaise. *See* Bordeaux mixture.
Bouteloua gracilis. *See* Grama grass.
Braman, Winfred W.—
Forbes, E B., and Kriss, Max: Computed as Compared with Directly Observed Fasting Katabolism of Cattle as a Measure of the Maintenance Requirement of Energy ... 167–179
French, R. B., Forbes, E. B., and Kriss, Max: Comparison of the Direct Measurement of the Heat Production of Cattle with the Computation of the Heat Production by the Respiratory-quotient Method ... 865–878
Kriss, Max, Fries, J. August, Jeffries, C. D., Swift, R. W., French, Rowland B., Maucher, J. V., jr., and Forbes, E. B.: Net-energy Values of Corn Silage, Soy-bean Hay, Alfalfa Hay, and Oats ... 785–796
Brassica arvensis. *See* Mustard.
Bread—
baking, function of gluten content of flour ... 241
loaf volume—
relation to protein content of flour ... 245–248
relation to protein content of wheat ... 245–246
relation to water absorption of flour ... 250–252
relation to wet and dry gluten content ... 248–250
mold—
cause, review of study ... 1020–1021
Red Fungi of *Monilia sitophila* Group, Life Histories and Heterothallism: C. L. Shear and B. O. Dodge ... 1019–1042
protein and loaf volume, relation to viscosity ... 252–256
red mold—
destruction in baking, discussion ... 1020–1021
review of study ... 1019–1021
Bread-mold fungus—
life history and taxonomic studies ... 1021–1027
viability, effect of heat on ... 1020, 1030–1031
Breeding—
buckwheat—
for length of style ... 181–183
self-fertilization experiments ... 185–190
soy-bean, for control of mottling ... 579–584
strawberry plants, hermaphrodite and pistillate intermediates ... 397–399
tomato, inheritance of fruit shapes ... 961–985
Broomcorn, smut susceptibility ... 826, 829, 831

Page

Buckwheat—
flower, morphology 181-183, 185
Inheritance of Length of Style: R. J. Garber and K. S. Quisenberry 181-183
seeds, number set by self-fertilization 187-189
self-fertility of principal species 186-189
Self-fertilization in: R. J. Garber and K. S. Quisenberry 185-190
Bud-rot Fungus, Coconut, New Host, *Sabal causairum* (Cook) Beccari: C. M. Tucker 879-888
Bud rots, species attacking various palms 886-887
Buffalo bur—
water need 1111-1113
water requirement of late season plants 1111, 1113
Bur, buffalo. *See* Buffalo bur.
Bunyea, Hubert: Adaptation of Bactericidal Action of Chloroform to Preparation of Bacterins 623-630
Burdette, Robert C., Griffin, Edward L., and Richardson, Charles H.: Relation of Size of Oil Drops to Toxicity of Petroleum-oil Emulsions to Aphids 727-738
Burgwald, L. H.: Some Variations of the Heat Method for Sterilizing Milking Machines 27-33
Burrknot Formations, Relation to the Vascular System of the Apple Stem: Charles F. Swingle 533-544
Burrknots, apple, cause discussion 542-543
Buttermilk—
Artificial, Some Factors Other Than Bacteria That Influence the Body: Georges Knaysi 771-784
improvement by physical means 783
quality, effect of chemicals, study 777-782

Cabbages—
injury by arsenicals added to soil 72
wilt caused by *Fusarium lycopersici* 226, 232
Cacao, infection with coconut bud rot 885
Cajan spp. *See* Pigeon pea.
Calcium—
arsenate, use against strawberry leaf roller 155-156
hydroxide. *See* Lime.
California, San Joaquin Valley, groundwater supply, effect of pumping 663-672
Calliephialtes comstockii, parasite of pine tip moth 616
Campopleæ frustranæ n. sp., description and life history 739
Canker, Apple and Pear Trees, Caused by *Glutinium macrosporum*, n. sp.: S. M. Zeller 489-496
Cankers, apple and pear, description of fungus on host 489-490
Canned corn. *See* Corn.
Canning—
corn, quality factors, with discussion 419-433
cranberries, discoloration, study of cause 889-892
pears, destruction of vitamin C 386-391
sweet corn, tests of quality 427-429
Capons—
heat production, basal, experimental results 953, 954
metabolism, basal, study 957
"Carbohydrate-high" plants, characteristics, discussion 125
Carbohydrates—
fermentation, effect on heat production of cattle 871, 878
tomato plant, percentage after phosphorus and no-phosphorus treatments 106, 107, 113, 116
utilization by fungi, notes 193-194
Carbon—
bisulphide, remedy for worms in horses 844
dioxide—
Effect upon the Germination of *Chlamydospores* of *Ustilago zeae* (Beckm.) Ung.: G. A. Platz, L. W. Durrell, and Mary F. Howe 137-147
percentage in respiratory exchange of cattle 868-869
production by chickens 552, 945-946
soil, determination by hydrogen peroxide method 348-349, 352-353
tetrachloride, use against worms, comparison with teatrchlorethylene 134-136

Page

Carbonates, soil, decomposition by hydrogen peroxide 344-346
Carbonic acid, effect on germination of spores 146
Card, L. E.—
Haines, W. T., and Mitchell, H. H.: Effect of Age, Sex, and Castration on Basal Heat Production of Chickens 945-960
Mitchell H. H., and Keith, M. Helen: Rate of Passage of Food Through Digestive Tract of Hen 759-770
Carter, Walter: Technic for Use with Homopterous Vectors of Plant Disease, with Special Reference to the Sugar-beet Leaf Hopper, *Eutettix tenellus* (Baker) 449-451
Carya olivæformis Nutt. *See* Pecan.
Caryopsis and Female Gametophyte, Development in *Poa pratensis* and *Poa compressa*: Alice M. Anderson 1001-1018
Casein, milk, solubility test 780
Castanea dentata. *See* Chestnut.
Castration—
Age and Sex, Effect on Basal Heat Production of Chickens: H. H. Mitchell, L. E. Card, and W. T. Haines 945-960
chickens, effect on basal metabolism 957-958
Cattle—
Fasting Katabolism, The Computed as Compared with the Directly Observed, as a Measure of the Maintenance Requirement of Energy: E. B. Forbes, Max Kriss, and Winfred W. Braman 167-179
feeding—
influence on respiratory exchange 868-869, 872-876
net-energy values of various feeds 785-796
Heat Production—
Computation by Respiratory-quotient Method, Comparison with Direct Measurement: E. B. Forbes, Max Kriss, Winfred W. Braman, and R. B. French 865-878
during fast, relation to energy 167-179
factors affecting 867
respiratory exchange—
as measure of heat production, experimental results 865-878
influence of feed 868-869, 872-873
See also Cows; Steers.
Ceratostoma chionea, study by Fries 1023-1024
Cercosporina kikuchii, parasitic fungus on seed coat of soy bean, cause of mottling 561
Cells, antipodal, development in bluegrass 1003
Cereals—
Nitrogen Compounds as Compared with Those of Rice Kernels: S. L. Jodidi 309-325
proteins, nutritive value, experimental results 297-308
Chætochloa italica. *See* Millet, Kursk.
Chalcid flies. *See* Flies.
Chalcididæ, parasites of pine tip moth, description of species 545-546
Chalcidoid Parasites, Four New, of the Pine Tip Moth, *Rhyacionia frustrana* (Comstock): A. B. Gahan 545-548
Charcoal, soil, study 347-348
Chenopodium album, water requirements 1136
Chestnut—
Blight-killed, Natural Replacement in Hardwood Forests of Northeast: C. F. Korstian and Paul W. Stickel 631-648
importance as forest tree 631
Chicken, Critical Temperature of: H. H. Mitchell and W. T. Haines 549-557
Chickens—
basal heat production—
data 951-956
Effect of Age, Sex, and Castration: H. H. Mitchell, L. E. Card, and W. T. Haines 945-960
digestion, study 759-770
gizzard, grit content 768-769
heat production, determination methods 930-933
mature—
basal heat production 932-934

Chickens—Continued. Page
mature—Continued.
Basal Metabolism of, and Net-energy Value of Corn: H. H. Mitchell and W. T. Haines 927–943
heating effect of corn on 936–942
metabolism, difference for sexes 934
sex, relation to basal metabolism 951–954, 956
surface area, estimation 950
See also Hen.
Chicks—
basal heat production, experimental data 947–949
carbon dioxide production, relation to weight and age 945, 946
embryo, temperature 945–946
hatching period, changes 945–946
Chlamydospores—
Phytophthora palmivora, from bud rot of palms, dimensions 884
Ustilago zeae (Beckm.) Ung., Germination, Effect of Carbon dioxide: G. A. Platz, L. W. Durrell, and Mary F. Howe 137–147
Chloroform—
Bactericidal Action, Adaptation to Preparation of Bacterins: Hubert Bunyea 623–630
bactericide use, method 624–625
potency tests against bacteria 625–630
vapor of, tests of sterilizing power 628–630
Chlorophyll, content of tomato leaves, discussion 125
Cirsium arvense, control with sulphuric acid 1068
Citrus, Attack of Undescribed White Fly in Porto Rico: H. L. Dozier 853–855
Clammyweed, water requirement of late-season plants 1111, 1112
Clayton, E. E.: Diplodia Ear-rot Disease of Corn 357–371
Clemmer, H. J., Tisdale, W. H., and Melchers, L. E.: Strains of Kernel Smuts of Sorghum, *Sphacelotheca sorghi* and *S. cruenta* 825–838
Climate, factors, relation to sterility of strawberries 409
Clover—
crimson, water requirement, experimental results 1102, 1104–1105, 1111, 1112, 1114
red, immunity to injury by sulphuric acid 1072
Cockerels, heat production, basal, experimental results 951, 954
Coconut—
Bud-rot Fungus, New Host, *Sabal causiarum* (Cook) Beccari: C. M. Tucker 879–888
palms, susceptibility to bud rots 885–886
Coelopisthia scutellata, n. sp., description, type, host, etc 331–332
Coleman, D. A., Dixon, H. B., and Fellows, H. C.: Comparison of Some Physical and Chemical Tests for Determining the Quality of Gluten in Wheat and Flour 241–264
Colletotrichum cajani Rangel, n. sp., cause of pigeon-pea anthracnose, description, growth, etc 592–595
Colley, Reginald H.—
and Taylor, Minnie W.: *Peridermium kurilense* Diet. on *Pinus pumila* Pall. and *Peridermium indicum* n. sp. on *Pinus excelsa* Wall 327–330
Hartley, Carl, and Taylor, Minnie W.: Morphologic and Biometric Comparison of *Cronartium ribicola* and *Cronartium occidentale* in the Aecial Stage 511–531
Compoplex tylodermatis, parasite of pine tip moth 618
Conidia, *Phytophthora palmivora*, from bud rot of palms, dimensions 884
Copper sulphate, mixing of solutions with lime in suspension, methods 681–684
Corn—
canned, consistency and flavor 431, 432
canning, quality factors and determination 427–433
chemical composition 936
composition percentage at various stages of maturity 421
diseases, cause, discussion 357–358

Corn—Continued. Page
Ear-rot—
Diplodia Disease: E. E. Clayton 357–371
factors affecting spread 359–360
feeding—
movement in digestive tract of chicken 762–768, 769
study in metabolism of hens 927–943
flowering dates, records for several kinds 416–417
heating effect—
on poultry 928, 931–942
with chickens 936–942
kernels ungerminated, nitrogen of 317–323
kinds and their characteristics 413–414, 424–427
metabolizable energy, experiments with poultry 928–931
net-energy value—
for mature chickens 942
of, and Basal Metabolism of Mature Chickens: H. H. Mitchell and W. T. Haines 927–943
nitrogen in, proportion in ungerminated kernels 317–323
seed—
drying, effect on spread of ear rot 360
infection, Diplodia, relation to stand 362–363
injury by Fusaria and Diplodia 361
seedlings—
asparagine and vernin, identification 652–655
Etiolated, Isolation and Identification of Some Organic Nitrogenous Compounds Occurring in: S. L. Jodidi 649–656
Silage, Soy-bean Hay, Alfalfa Hay, and Oats, Net-energy Values: E. B. Forbes, Winfred W. Braman, Max Kriss, J. August Fries, C. D. Jeffries, R. W. Swift, Rowland B. French, and J. V. Maucher, jr 785–796
stand, relation to Diplodia seed infection 362–363
stored, source of Angoumois grain moth 461–462, 463–465, 466–467, 471
sweet. *See* Sweet corn.
tenderness, puncture test, etc 430
Tom Thumb, water requirement of late-season plants 1111, 1112
toughness, cause and variation 432–433
varieties, water requirement, experimental results 1101–1103, 1122–1123, 1126, 1131–1132, 1137, 1139–1140, 1143–1146
water requirement, effect of season 1148–1151, 1153–1154, 1158–1159, 1161–1163
yield and—
stalk growth, effect of seed infection 364–367
vigor, effect of seed infection 359, 364–370
Cornstalks—
juice, specific gravity in disease 191
Smut (*Ustilago zeae*), Effect on Sugar Content: Annie May Hurd-Karrer and Heinrich Hasselbring 191–195
Cotton—
bolls, shedding percentage, determination by genetic factors 921–926
efficiency in use of water 1164–1166
fertilizers, use of cyanamid and ammonium nitrate 658–662
Hybrid, Inheritance of Shedding Rate: Thomas H. Kearney and Robert H. Peebles 921–926
plants, water requirement, experimental results 1109–1110, 1125, 1126, 1134–1135, 1137, 1141–1142, 1144–1146
Shedding, Inheritance of Rate in Hybrid: Thomas H. Kearney and Robert H. Peebles 921–296
water requirement, effect of season 1150–1151, 1155, 1158–1159, 1161–1163
Cottonseed—
maturity, relation to oil formation 989
oil content, relation to gossypol content, study 987–991
weight, relation to chemical composition and gossypol content 990–991
Cottonseeds, Gossypol Content and Chemical Composition During Certain Periods of Development: Willis D. Gallup 987–992
Cottony leak—
control measures 446–447
of beans, study 443–447
Cowpea, efficiency in use of water 1164–1160

Page

Cowpeas—
water requirement—
effect of season 1150–1151, 1155, 1158, 1161–1163
experimental results 1102, 1109, 1114, 1123–1124, 1126, 1134, 1137, 1141–1142, 1143, 1144–1146
wilt caused by *Fusarium lycopersici* 227, 232
Cows, Lactation, Measures of Persistency: W. L. Gaines 373–383
See also Cattle.
Cranberries, Canned—
Discoloration: Fred S. Morse 889–892
minerals in 890–892
Cranberry—
false blossom, description, history, etc 35–37
False-blossom Disease, a Biochemical Study: C. P. Spaeth and H. R. Kraybill 35–47
plant, tissue study in health and disease 40–44
plants, chemical analysis 40–44
Craven, Verral C., and Kramer, Martha M.: Vitamin C Content of Fresh and Canned Pear 385–392
Cremastus epagoges, parasite of pine-tip moth 618
Crimson Clover, water requirements 1102, 1104–1105, 1111, 1112, 1114
Cronartium—
occidentale, Aecial Stage, Morphologic and Biometric Comparison with *Cronartium ribicola*: Reginald H. Colley, Carl Hartley, and Minnie W. Taylor 511–531
ribicola—
Aecial Stage, Morphologic and Biometric Comparison with *Cronartium occidentale*: Reginald H. Colley, Carl Hartley, and Minnie W. Taylor 511–531
Sporidia, Results of Inoculating *Pinus Strobus* with: Harlan H. York, Walter H. Snell, and Annie Rathbun-Gravatt 497–510
spp.—
biometric data on aeciospores 512, 514–515
identification of specimens 525–528
peridia, comparisons and discussion of differences 520–525
similarity to *Peridermium* spp 328–329, 330
Crops—
dry-matter production, relation to water requirement 1159–1166
efficiency in use of water 1161–1166
Growing, Injury by the Application of Arsenical Compounds to Soil: H. E. Morris and D. B. Swingle 59–78
variety and genus, water requirement based on grain, seed, or tuber production 1177–1178
water—
requirement, probable range 1151–1159
requirements based on dry matter 1172–1176, 1180–1184
requirements, range 1151–1159
water-requirement measurements, summary of results 1143–1147
Crown diseases, palm. *See* Bud rots.
Cryptocampus angustus Htg., destruction in willow 755
Cucumbers, injury by arsenicals added to soil 72
Culpepper, C. W., and Magoon, C. A.: Study of the Factors Determining Quality in Sweet Corn 413–433
Curly top, beet, organism isolation 451
Currant, black, source of infection of White pine with blister rust 498–500, 508–509
Cushman, R. A.—
New Species and New Forms of Ichneumonidae Parasitic upon the Gipsy-moth Parasite, *Apanteles melanoscelus* (Ratzeburg) 453–458
Parasites of the Pine Tip Moth, *Rhyacionia frustrana* (Comstock) 615–622
Three New Hymenopterous Parasites of the Pine Tip Moth, *Rhyacionia frustrana* (Comstock) 739–741
Cyanamid, Applications of, Effect on Nitrate Content of Field Soils: F. E. Allison 657–662

Page

Cytological Study of Orange Leaf Rust, *Puccinia triticina*, Physiologic Form 11, on Malakoff Wheat 697–714

Dairying—
milking-machine sterilization, heat method variations 27–33
milk-secretion study 373–383
Darrow, George M.: Sterility and Fertility in the Strawberry 393–411
Dendroctonus brevicomis Lec. *See* Beetle, western pine; Beetles, bark.
Dent corns, canning tests, etc 426, 429
Diet, effect on toxicity of worm removers 135–136
Digestive Tract of Hen, Rate of Food Passage Through: M. Helen Keith, L. E. Card, and H. H. Mitchell 759–770
Dimmockia pallipes, n. sp., description, type, host, etc 333
Diplodia—
Ear-rot Disease of Corn: E. E. Clayton 357–371
zeae, description and study 357–358
Disease—
Diplodia Ear Rot of Corn: E. E. Clayton 357–371
False Blossom, of Cranberry, Biochemical Study: C. P. Spaeth and H. R. Craybill 35–47
Disinfectants, effectiveness against loose smut of barley 993
Dixon, H. B., Fellows, H. C., and Coleman, D. A.: Comparison of Some Physical and Chemical Tests for Determining the Quality of Gluten in Wheat and Flour 241–264
Dodge, B. O., and Shear, C. L.: Life Histories and Heterothallism of Red Bread-Mold Fungi of *Monilia sitophila* Group 1019–1042
Dogs—
anthelmintic for, tetrachlorethylene as, results, note 129
worms removal with santonin, experimental results 840–843
Dozier, H. L.: White Fly, Undescribed, Attacking Citrus in Porto Rico 853–855
Drainage—
computation of run-off 799, 820
cranberry bogs, relation to false-blossom disease 44–45
effect of pumping from deep wells, experimental results 663–672
study for erosion prevention 797–823
systems, characteristics determining choice 821–822
See also Run-off.
Drechsler, Charles: Two Water Molds Causing Tomato Rootlet Injury 287–296
Drought, effect on activity of white pine blister rust 498, 502
Ducks, heat production, average basal, note 935
Dunbar, C. O., Gilligan, G. M., and Holland, E. B.: Influence of Form and Proportion of Lime Used and of Method of Mixing on the Resulting Bordeaux Mixture 677–686
Dunnam, E. W.: Notes on the Life History and Control of the Strawberry Leaf Roller 149–156
Durrell, L. W., Howe, Mary F., and Platz, G. A.: Effect of Carbon Dioxide Upon the Germination of Chlamydospores of *Ustilago zeae* (Beckm.) Ung 137–147
Dusts, insect, use against strawberry leaf roller 155–156

Ear rot, corn—
cause, activity, and control experiments 357–371
Diplodia Disease: E. E. Clayton 357–371
relation to seed infection 364
Eggplant, infection with coconut bud rot 885
Eggs, production, effect on metabolism of hen 935
Elachertus pini, n. sp., description 547–548
Ellington, George W., and Simmons, Perez: Dispersion of the Angoumois Grain Moth to Wheat Fields 459–471
Elodea canadensis, spraying with sulphuric acid, effect 1080–1081

Page

Embryo, development in bluegrass seed.. 1007–1010
Embryology, sugar beet, study..... 14–22
Emulsions—
oil, making methods..... 730
Petroleum-oil, Toxicity to Aphids, Relation of Size of Oil Drops: Edward L. Griffin, Charles H. Richardson, and Robert C. Burdette..... 727–738
Encarsia variegata, parasite on citrus white fly..... 855
Endosperm, development in bluegrass seed..... 1003–1004
Endothia parasitica, injury to chestnut..... 631–648
Energy—
Maintenance Requirement Measure in Katabolism of Cattle: E. B. Forbes, Max Kriss, and Winfred W. Braman.. 167–179
metabolism, notes on study..... 927–928
Net Values, Corn Silage, Soy-bean Hay, Alfalfa Hay, and Oats: E. B. Forbes, Winfred W. Braman, Max Kriss, J. August Fries, C. D. Jeffries, R. W. Swift, Rowland B. French, and J. V. Maucher, jr..... 785–796
Enzymes—
effect on pectic compounds in wheat..... 711
resistance to chloroform..... 623
Epiurus indagator, parasite of pine tip moth. 616
Eridontomerus isonomatis, distribution, hosts, and life history..... 483–488
Erosion on small areas, study..... 797–823
Erythroneura spp. *See* Leaf hoppers, grape.
Ether, use in vaccine preparation, note..... 624
Etiolated seedlings. *See* Corn Seedlings.
Eulophidae family—
description, type, hosts, etc..... 333
parasites of pine tip moth, description of species..... 546–548
Eupelminus saltator, distribution, hosts, and life history..... 473–482
Eupelmus cyaniceps, parasite of pine tip moth..... 619
Eurycapus saltator, distribution, hosts, and life history..... 473–482
Eurytoma—
parva—
description and life history..... 745, 746–751
(Girault) Phillips and Its Biology as a Parasite of Wheat Jointworm, *Harmolita tritici* (Fitch): W. J. Phillips..... 743–758
origin and history..... 744–745
parasite enemies..... 751
parasitic and phytophagous habits of larva..... 755–757
tylodermatis, parasite of pine tip moth..... 617
Eutettix tenellus (Baker), Leaf Hopper of Sugar Beet. Study by Means of a Technic for Use with Homopterous Vectors of Plant Diseases: Walter Carter..... 449–451
Evaporation—
correlation with water requirement of plants..... 1169–1170
effect on water requirement of plants.. 1147–1153, 1159, 1160–1161, 1169–1170
relation to water requirement of plants.. 1147–1166

Fagopyrum spp. *See* Buckwheat.
False-blossom disease—
character, description, and comparison.. 35–37, 45–46, 47
Cranberry, a Biochemical Study: C. P. Spaeth and H. R. Kraybill..... 35–47
Fasting—
cattle, katabolism as measure of maintenance requirement of energy..... 167–179
effect on heat production of cattle.. 868–869, 872–877
Feed—
assimilation and energy production by cattle..... 168–179
chicken, relation to critical temperature.. 556–557
energy content, relation to basal metabolism..... 927–943
influence on respiratory exchange of cattle..... 868–869, 872–876
net-energy value, determination..... 927
See also Rations.

Page

Feeding, chicken, passage of food through digestive tract..... 759–770
Feeds, cattle, net-energy values..... 785–796
Fellows, H. C., Coleman, D. A., and Dixon, H. B.: Comparison of Some Physical and Chemical Tests for Determining the Quality of Gluten in Wheat and Flour..... 241–264
Fermentation—
arabinose, profits..... 90–92
effect on heat production of cattle..... 871, 878
food, factor in measuring heat production of cattle..... 869–873
products, sauerkraut juice, data..... 85, 90–92
Sauerkraut, at Low Temperatures, Studies with Special Reference to Changes in the Bacterial Flora: Lillian A. Priem, W. H. Peterson, and E. B. Fred.. 79–95
Fertility and Sterility in the Strawberry: George M. Darrow..... 393–411
Fertilizers—
cotton, nitrogen formation experiments and results..... 657–662
use, relation to mottling in soy beans..... 575
Feterita—
hybrids, smut infection..... 831
smut infections..... 831, 836–838
Fire—
controlled, effect on bark beetles..... 611
Injury, Relation to Bark-beetle Attack in Western Yellow Pine, Preliminary Studies: J. M. Miller and J. E. Patterson..... 597–613
Fires, relation to bark-beetle control..... 612
Flax, varieties, water requirement, experimental results..... 1120–1122, 1132–1133, 1141–1142
Fleming, Walter E.: Effect of Soil Microorganisms on Paraffin Used as a Coating to Decrease the Injurious Action of Lead Arsenate on Plant Roots..... 335–338
Flies, Chalcid, New Species Parasitic on the Gipsy-moth Parasite, *Apanteles melanoscelus* (Ratzeburg): C. F. W. Muesebeck.. 331–333
Flint corns, canning tests, etc..... 425–426, 429
Flora, bacterial. *See* Bacterial.
Flour—
baking quality, indication of texture of kernel as to..... 242–244
corns, canning tests, etc..... 422–423
Gluten Quality Determination Tests, Physical and Chemical, Comparison: D. A. Coleman, H. B. Dixon, and H. C. Fellows..... 241–264
viscosity, index of gluten quality..... 252–255
water absorption—
relation to loaf volume of bread..... 250–252
relation to protein content of bread..... 259
Flower—
beet, description..... 2
buds—
cotton, relation to shedding of bolls..... 923–925
cotton, shedding, relation to boll shedding..... 924–925
pecan, time and process of differentiation..... 692–696
Flowering, sweet corn, discussion..... 416–419
Flowers—
buckwheat, morphology of..... 181–183, 185
Pistillate—
of Pecan, Morphological Differentiation: D. V. Shuhart..... 687–696
of pecan, source..... 691–692
on hermaphrodite strawberry varieties.. 397
strawberry—
parts affected by unfavorable conditions..... 411
setting..... 393–411
unfruitfulness, cause of increase..... 409
Sugar Beet, and Seed, Development: Ernst Artschwager..... 1–25
Fly—
Hessian, parasites, Hymenopterous..... 473–476
White, Underscribed, Attacking Citrus in Porto Rico: H. L. Dozier..... 853–855
Food—
fermentation, factor in measuring heat production of cattle..... 869–873

Food—Continued. Page
Passage Through Digestive Tract of Hen: M. Helen Keith, L. E. Card, and H. H. Mitchell 759–770
products, proteins, nutritive value, experimental results 297–308
Forbes, E. B.—
Braman, Winfred W., Kriss, Max, Fries, J. August, Jeffries, C. D., Swift R. W., French, Rowland B., and Maucher, J. V., jr.: Net-energy Values of Corn Silage, Soy-bean Hay, Alfalfa Hay, and Oats 785–796
Kriss, Max—
and Braman, Winfred W.: Computed as Compared with the Directly Observed Fasting Katabolism of Cattle as a Measure of the Maintenance Requirement of Energy 167–179
Braman, Winfred W., and French, R. B.: Comparison of the Direct Measurement of the Heat Production of Cattle with the Computation of the Heat Production by the Respiratory-quotient Method 865–878
Forests—
burned-over, losses by fire and insect damage 597–613
Hardwood, of Northeast, Natural Replacement of Blight-killed Chestnut: C. F. Korstian and Paul W. Stickel 631–648
Northeast, replacement of blight-killed chestnut 631–648
Foxes, Anthelmintic foe, Critical Tests of Tetrachlorethylene as: Karl B. Hanson 129–136
Fragaria—
chiloensis, remarks on 394–396, 397
spp., sterility and fertility study 393–411
Franseria tenuifolia, water requirement of late-season plants 1111, 1113, 1114
Fred, E. B., Priem, Lillian A., and Peterson, W. H.: Studies of Commercial Sauerkraut with Special Reference to Changes in the Bacterial Flora During Fermentation at Low Temperatures 79–95
French—
R. B., Forbes, E. B., Kriss, Max, and Braman, Winfred W.: Comparison of the Direct Measurement of the Heat Production of Cattle with the Computation of the Heat Production by the Respiratory-quotient Method 865–878
Rowland, B., Maucher, J. V., jr., Forbes, E. B., Braman, Winfred W., Kriss, Max, Fries, J. August, Jeffries, C. D., and Swift, R. W.: Net-energy Values of Corn Silage, Soy-bean Hay, Alfalfa Hay, and Oats 785–796
Fries—
E., study of Melanospora, note 1023
J. August, Jeffries, C. D., Swift, R. W., French, Rowland B., Maucher, J. V., jr., Forbes, E. B., Braman, Winfred W., and Kriss, Max: Net-energy Values of Corn Silage, Soy-bean Hay, Alfalfa Hay, and Oats 785–796
Frost, effect on strawberry pistils 404
Fructose, fermentation and its products 90, 92
Fruit—
buds of pecan, differentiation 693–696
rot, apple, cause and description 495–496
tomato, effect of phosphorus on development 123–124
Fruits, Tomato, Inheritance of Ovate and Related Shapes: E. W. Lindstrom 961–985
Fungi—
causes of tomato-rootlet injury, study 287–296
kinds causing watery soft rot, comparison of symptoms 443
life history and taxonomy, study 1021–1027
parasitic, nutrition notes 193–194
Red Bread-mold, *Monilia sitophila* Group, Life Histories and Heterothallism: C. L. Shear and B. O. Dodge 1019–1042
soil, action in removal of paraffin from lead arsenate particles 337
spore germination, stimulation study, review 137–138

Fungus— Page
cause of—
canker on apple and pear 489–496
mottling in soy beans 561
Coconut Bud-rot, New Host, *Sabal causiarum* (Cook) Beccari: C. M. Tucker 879–888
Fusaria—
growth, source of energy for 218–223
injury to seed corn 361
Fusarium—
batatis Wr., cause of stem rot of sweet potatoes 915, 919
hyperoxysporum Wr., cause of stem rot of sweet potatoes 915, 919
lycopersici—
growth temperatures 203–204, 206–210
physiological studies 203–223
Sacc., Cause of Tomato Wilt, Studies: Richard P. White 197–239
toxic excretory products and their relation to tomato wilt 223–233
oxysporum, inoculation of sweet potatoes, with results 893
spp., infection of sweet potatoes, relation to soil conditions 435–441

Gahan, A. B.: Chalcidoid Parasites, Four New, of Pine Tip Moth, *Rhyacionia frustrana* (Comstock) 545–548
Gaines, W. L.: Measures of Persistency of Lactation 373–383
Galls, woolly aphis, differences from burr-knots of appie 542–543
Gallup, Willis D.: Gossypol Content and Chemical Composition of Cottonseeds During Certain Periods of Development 987–992
Gametophyte, Female, and Caryopsis, Development in *Poa pratensis* and *Poa compressa:* Alice M. Andersen 1001–1018
Gandul. *See* Pigeon pea.
Garber, R. J., and Quisenberry, K. S.—
Inheritance of Length of Style in Buckwheat 181–183
Self-fertilization in Buckwheat 185–190
Gas oil. *See* Petroleum oil.
Geese, heat production, basal average, note 935
Gelatin, effect on lump content of buttermilk 782, 784
Gelis, apantelis, n. sp., description 454
Genetics. *See* Inheritance.
Germination—
ascospores of *Neurospora crassa* 1031–1036
bluegrass seed 1001
Chlamydospores of *Ustilago zeae*, Effect of Carbon Dioxide: G. A. Platz, L. W. Durrell, and Mary A. Howe 137–147
fungus of bread mold 1020, 1030–1031
spore, remarks 137–146, 491–494, 506, 861
Gilligan, G. M., Holland, E. B., and Dunbar, C. O.: Influence of Form and Proportion of Lime Used and of Method of Mixing on the Resulting Bordeaux Mixture 677–686
Gipsy Moth Parasite, *Apanteles melanoscelus* (Ratzeburg), Parasitism of New Species and New Forms of Ichneumonidae upon: R. A. Cushman 453–458
Gipsy-moth Parasite, *Apanteles melanoscelus* (Ratzeburg), Parasitism of New Species of Chalcid Flies: C. F. W. Muesebeck 331–333
Gizzard, chicken—
grit content, experimental result 768–769
movements 759, 768
Glucose, fermentation and its products 90, 92
Gluten—
Quality Determination in Wheat and Flour, Tests Physical and Chemical, Comparison: D. A. Coleman, H. B. Dixon, and H. C. Fellows 241–264
flour, relation to loaf volume 248–256
wheat and flour, relationship studies 256–262
Glutinium macrosporum, n. sp.—
Cause of Canker on Apple and Pear Trees: S. M. Zeller 489–496
morphology, culture, and spore germination 491–494
Glypta varipes, parasite of pine tip moth 618
Goniozus longiceps, parasite of pine tip moth 616

Page

Gooseberries, wild. *See* Ribes.
Gossypium hirsutum, water requirements... 1110, 1125, 1135, 1142
Gossypol, Content and Chemical Composition of Cottonseeds During Certain Periods of Development: Willis D. Gallup... 987–992
Grafting—
bean, effects... 674–676
Effects Reciprocal: Fred W. Hofmann... 673–676
Grain—
immunity to injury by sulphuric acid... 1072
Moth. *See* Angoumois grain moth.
production, relation to water requirements... 1177–1178
yield increase through weed eradication... 1066
Grains—
constituents... 309
proteins, nutritive value, experimental results... 297–308
retention in craw of chicken... 760
water requirement, experimental results... 1097–1104
Grama grass—
efficiency in use of water... 1164–1165
water requirement—
effect of season... 1150–1151, 1155, 1158–1159, 1161–1163
experimental results... 1109–1111, 1125, 1126, 1135–1136, 1137, 1142–1145
Grape Leaf Hoppers, Oviposition Rate: Chester I. Bliss... 847–852
Grapes, kinds, infestation with leaf hoppers... 849
Grass, grama. *See* Grama grass.
Griffin, Edward L., Richardson, Charles H., and Burdette, Robert C.: Relation of Size of Oil Drops to Toxicity of Petroleum-oil Emulsions to Aphids... 727–738
Griffiths, Marion A. and Tisdale, W. H.: Variants in *Ustilago nuda* and Certain Host Relationships... 993–1000
Grit, study in gizzard of hen, experimental results... 768–769
Guar, water requirement, experimental results... 1102, 1111, 1112

Habrocytus thyridopterigis, parasite of pine tip moth... 617
Haines, W. T.—
and Mitchell, H. H.—
Basal Metabolism of Mature Chickens and Net-energy Value of Corn... 927–943
Critical Temperature of the Chicken... 549–557
Mitchell, H. H., and Card, L. E.: Effect of Age, Sex, and Castration on Basal Heat Production of Chickens... 945–960
Haltichella rhyacioniae—
n. sp., description... 545–546
parasite of pine tip moth... 619
Hanson, Karl B.: Critical Tests of Tetrachlorethylene as an Anthelmintic for Foxes... 129–136
Hardwoods. *See* Forests, Hardwood.
Harmolita spp. *See* Jointworms.
Harter, L. L., and Whitney, W. A.—
Comparative Susceptibility of Sweet-potato Varieties to Stem Rot... 915–919
Mottle Necrosis of Sweet Potatoes... 893–914
Relation of Soil Temperature and Soil Moisture to the Infection of Sweet Potatoes by the Stem-rot Organisms... 435–441
Transit Disease of Snap Beans Caused by *Pythium aphanidermatum*... 443–447
Hartley, Carl, Colley, Reginald H., and Taylor, Minnie W.: Morphologic and, Biometric Comparison of *Cronartium ribicola* and *Cronartium occidentale* in the Aecial Stage... 511–531
Hasselbring, Heinrich, and Hurd-Karrer, Annie May: Effect of Smut (*Ustilago zeae*) on the Sugar Content of Cornstalks... 191–195
Hat palm, host, new, of coconut bud rot... 879–888
Hay. *See* Alfalfa; Soy bean.

Heat—
effect on—
bacteria products... 623–624
Method of Sterilizing Milking Machines, Variations: L. Burgwald... 27–33
germination of bread-mold fungus... 1020, 1030–1031
production—
basal, experimental methods... 947
Basal of Chickens, Effect of Age, Sex, and Castration: H. H. Mitchell, L. E. Card, and W. T. Haines... 945–960
effect of external temperatures on animals... 555–557
measurement, direct method... 866
measurement, respiratory-quotient method, discussion... 866–867
of Cattle, Computation by Respiratory-quotient Method, Comparison with Direct Measurement: E. B. Forbes, Max Kriss, Winfred W. Braman, and R. B. French... 865–878
Hegari. *See* Sorghums.
Helianthus annuus, water requirements, experimental results... 1135, 1136
Hemicellulose, extraction from tomato plant... 99–100
Hemiteles apantelis, n. sp., description... 453
Hen, Digestive Tract, Rate of Passage of Food Through: M. Helen Keith, L. E. Card, and H. H. Mitchell... 759–770
Hens—
fasting, critical-temperature determination... 549–557
feed, relation to critical temperature... 556–557
heat production, effect of work of digestion... 927–928
metabolism—
effect of egg production... 935, 942
study in relation to feeding of corn... 927–943
production of carbon dioxide at different external temperatures... 552
Rhode Island Red, critical temperature... 931, 941
See also Chickens.
Herdbook, Swine, Source of Data for Investigation of Sex Ratio and Frequency of Sex Combinations in Pig Litters: Hugh C. McPhee... 715–726
Heredity, soy-bean, relation to mottling... 557–578
Hessian fly, parasites, Hymenopterous... 473–476
Heterodera schachtii—
counting and number found in field... 274–276
Schmidt, relation to mononchs... 265–286
Heterothallism—
ascomycetes... 1027–1028
of the Red Bread Mold Fungi of the *Monilia sitophila* Group, with Life Histories: C. L. Shear and B. O. Dodge... 1019–1042
Hicoria pecan. *See* Pecan.
Hill, J., remarks on structure of *Monilia* spp... 1024–1025
Hoagland, Ralph, and Snider, George G.: Value of Beef Protein as a Supplement to the Proteins in Certain Vegetable Products... 297–308
Hofmann, Fred W.: Reciprocal Effects from Grafting... 673–676
Hogs—
proportion of males at birth... 718
sex ratio and sex combination in litters, study... 715–726
worms, removal with santonin, tests... 843–844
Holland, E. B., Dunbar, C. O., and Gilligan, G. M.: Influence of Form and Proportion of Lime Used and of Method of Mixing on the Resulting Bordeaux Mixture... 677–686
Homopterous Vectors of Plant Disease, Technic for Use, with Special Reference to the Sugar-beet Leaf Hopper, *Eutettix tenellus* (Baker): Walter Carter... 449–451
Hookworms, removal from—
animals, effectiveness of santonin... 840–843
foxes, by tetrachlorethylene... 129–136
Hopper, leaf. *See* Leaf Hopper.
Hoppers, Grape Leaf, Oviposition Rate: Chester I. Bliss... 847–852
Hordeum distichon, water requirements 1100, 1120, 1131, 1138, 1144–1146, 1150, 1154, 1173

Page

Horses, worms removal 844
Hotbed, source of sweet potato diseases 902–903, 911

Howe, Mary F., Platz, G. A., and Durrell, L. W.: Effect of Carbon Dioxide upon the Germination of Chlamydospores of *Ustilago zeae* (Beckm.) Ung 137–147
Hull, pecan nut, structure and thickness in different varieties 1052
Humidity, effect on activity of white pine blister rust 498, 501, 502, 506
Hurd-Karrer, Annie May, and Hasselbring, Heinrich: Effect of Smut (*Ustilago zeae*) on the Sugar Content of Constalks 191–195
Hybrids—
Cotton, Inheritance of Shedding Rate: Thomas H. Kearney and Robert H. Peebles 921–926
wheat, water requirement, comparison with common wheats 1127–1128
Hydrogen Peroxide, Means of Determination of Organic Matter in Soils: W. O. Robinson 339–356
Hydrogen-ion concentration—
effect of carbon dioxide on 142–143
relation to growth of microorganisms 211, 219
Hymenoptera—
Three New Parasites of Pine Tip Moth, *Rhyacionia frustrana* (Comstock): R. A. Cushman 739–741
Two Parasites of American Jointworms: W. J. Phillips and F. W. Poos 473–488
Hypopteromalus inimicus, n. sp., description, type, host, etc 332
Hyssopus—
rhyacioniae, n. sp., description 546–547
spp., parasites of pine tip moth 617

Ichneumonidae, New Species and New Forms Parasitic upon the Gipsy-moth Parasite, *Apanteles melanoscelus* (Ratzeburg): R. A. Cushman 453–458
Idaho, soils, infestation with nemas, study 265–286
Inheritance, Tomato, of Ovate and Related Shapes in Fruits: E. W. Lindstrom 961–985
Insect eggs, presence on ovaries of Canadian bluegrass 1010–1011
Insecticides—
arsenical, historical review 59–60
paraffin-coated, effect on plant roots 335–338
use against strawberry leaf roller 155–156
Insects—
damage to burned-over forests 602–606, 608–611
sucking, nutrition study, apparatus 449–451
Ipomoea batatas Poir. *See* Sweet potatoes.
Iron—
detection in canned cranberries 890–892
sulphate spray, effect of season 1080–1081
Irrigation, pumping experiment in San Joaquin Valley 663–672
Itoplectis conquisitor, parasite of pine tip moth 619
Iva xanthifolia, water requirement, experimental results 1135, 1136

Japanese beetle. *See* Beetle, Japanese.
Jeffries, C. D., Swift, R. W., French, Rowland B., Maucher, J. V., jr., Forbes, E. B., Braman, Winfred W., Kriss, Max, and Fries, J. August: Net-energy Values of Corn Silage, Soy-bean Hay, Alfalfa Hay, and Oats 785–796
Jodidi, S. L.—
Isolation and Identification of Some Organic Nitrogenous Compounds Occurring in Etiolated Corn Seedlings 649–656
Nitrogen Compounds of the Rice Kernel as Compared with Those of Other Cereals 309 325
Jointworm—
Harmolita tritici (Fitch), of Wheat, Parasite *Eurytoma parva* (Girault) Phillips and Its Biology: W. J. Phillips 743–758
parasites, feeding habits 757
Jointworms—
American, Parasites Hymenopterous: W. J. Phillips and F. W. Poos 473–488
wheat, larva classification 745–746

Kafir. *See* Sorghums.
Kalmia latifolia, effect on reforestation 644
Kaoliang. *See* Sorghums.
Katabolism, Fasting—
Computed as Compared with the Directly Observed, of Cattle, as a Measure of the Maintenance Requirement of Energy: E. B. Forbes, Max Kriss, and Winfred W. Braman 167–169
of steers, experimental results 793
Kearney, Thomas H., and Peebles, Robert H.: Inheritance of Rate of Shedding in a Cotton Hybrid 921–926
Keith, M. Helen, Card, L. E., and Mitchell, H. H.: Rate of Passage of Food through Digestive Tract of Hen 759–770
Kernel—
Rice, Nitrogen Compounds as Compared with Those of Other Cereals: S. L. Jodidi 309–325
Smuts of Sorghum, *Sphacelotheca sorghi* and *S. cruenta:* W. H. Tisdale, L. E. Melchers, and H. J. Clemmer 825–838
Kernels—
Dark, Hard, and Protein Content in Hard Red Spring Wheat, Study: C. E. Mangels 157–166
Rye, ungerminated, proportion of nitrogen in 317–323
Kerosene. *See* Petroleum.
Knaysi, Georges: Some Factors Other Than Bacteria That Influence the Body of Artificial Buttermilk 771–784
Koehler, Dungan, and Holbert, statement on effect of Diplodia on seed corn 357
Korstian, C. F., and Stickel, Paul W.: Natural Replacement of Blight-killed Chestnut in Hardwood Forests of Northeast 631–648
Kramer, Martha M., and Craven, Verral C.: Vitamin C Content of Fresh and Canned Pear 385–392
Kraybill, H. R., and Spaeth, C. P.: Biochemical Study of the False-blossom Disease of the Cranberry 35–47
Kriss, Max, Braman, Winfred W.—
and Forbes, E. B.: Computed as Compared with the Directly Observed Fasting Katabolism of Cattle as a Measure of the Maintenance Requirement of Energy 167–179
French, R. B., and Forbes, E. B.: Comparison of the Direct Measurement of the Heat Production of Cattle with the Computation of the Heat Production by the Respiratory-quotient Method 865–878
Fries, J. August, Jeffries, C. D., Swift, R. W., French, Rowland B., Maucher, J. V., jr., and Forbes, E. B.: Net-energy Values of Corn Silage, Soy-bean Hay, Alfalfa Hay, and Oats 785–796
Kursk millet. *See* Millet, Kursk.

"Lactalbumin," milk, cause, note 780
Lactation—
cows, statistical constants of persistency 380
Measures of Persistency: W. L. Gaines 373–383
Lactic acid, forms produced by sauerkraut cultures, data 92–93
Lamb's-quarters, water requirement, experimental results 1135–1136
Larva, pine tip moth, parasties of, external and internal 616–618
Larvae—
control in soil 336–337
Eurytoma parva and *Harmolita tritici*, classification 745–749
Laurel, mountain, agency in retarding reforestation 644
Lead Arsenate—
Acid, Toxicity on Japanese Beetle (*Popillia japonica* Newm.), Study: E. R. Van Leeuwen 1043–1047
Injurious Action on Plant Roots, Effect of Soil Microorganisms of Paraffin Used as Coating to Decrease: Walter E. Fleming 335–338
use against strawberry leaf roller 155–156

Leaf— Page
Hopper, *Eutettix tenellus* (Baker), of Sugar Beet. Study by Means of a Technic for Use with Homopterous Vectors of Plant Disease: Walter Carter 449–451
Hoppers—
Grape, Oviposition Rate: Chester I. Bliss 847–852
numbers, effect on oviposition 850–851
roller, strawberry—
insecticides against 155–156
Life History and Control: E. W. Dunnam 149–156
natural enemies 154
rust. *See* Rust, orange leaf.
spot, pigeon pea, study 589–596
Leaves, electrical charge, relation to toxicity of sprays 728–729
Legumes, varieties, water requirement 1102, 1104–1109, 1114, 1123–1124, 1133–1134
Lemons, content of vitamin C (in table) 391
Light—
lack of, effect on flowers of strawberry plant 403, 409
relation to mottling in soy beans 562
Lime—
active, explanation of term 679
effect on copper precipitates 677
effectiveness against strawberry leaf roller 156
juice, content of vitamin C (in table) 391
mixing—
method with form and proportion of lime, effect on Bordeaux mixture 677–686
with copper sulphate solutions, method 681–684
Limewater, use in Bordeaux mixture 678, 679, 680, 685
Lindstrom, E. W.: Tomato Fruits, Inheritance of Ovate and Related Shapes 961–985
Linkage, fruit shapes and other factors in tomatoes 968–971
Linum usitatissimum. *See* Flax.
Liquids, passage through digestive tract of hen 759
Litter, grain, source of Angoumois moth infestation 460–461, 462, 463–464, 465, 466, 471
Litters, Pig, Swine Herdbook as a Source of Data for Investigation of Sex Ratio and Frequency of Sex Combinations: Hugh C. McPhee 715–726
Liver, fox's, injury by tetrachlorethylene 132–133, 135, 136
Livestock, heat production during fast as measure of maintenance requirement of energy, study review 167–174
Lixophaga spp., parasites of pine tip moth 618
Loam, Lexington silt, description 797–798
Loose smut. *See* Smut.
Lupinus albus, water requirement, experimental results 1102, 1109, 1114
Lycopersicon esculentum Mill. *See* Tomato.

MacGillivray, John H.: Effect of Phosphorus on the Composition of the Tomato Plant 97–127
Magoon, C. A., and Culpepper, C. W.: Study of the Factors Determining Quality in Sweet Corn 413–433
Mangels, C. E.: Study of Dark, Hard Kernels and Protein Content of Hard Red Spring Wheat 157–166
Maucher, J. V., jr., Forbes, E. B., Kriss, Max, Fries, J. August, Jeffries, C. D., Braman, Winfred W., Swift, R. W., and French, Rowland B.: Net-energy Values of Corn Silage, Soy-bean Hay, Alfalfa Hay, and Oats 785–796
McPhee, Hugh C.: Swine Herdbook as a Source of Data for the Investigation of Sex Ratio and Frequency of Sex Combinations in Pig Litters 715–726
Meat—
protein, mixture with vegetable protein, experimental results 302–306
proteins, nutritive value, experimental results 297–308
Medicago spp. *See* Alfalfa.

Page
Melanospora spp., discussion in relation to bread mold 1023–1024
Melchers, L. E., Clemmer, H. J., and Tisdale, W. H.: Strains of Kernel Smuts of Sorghum, *Sphacelotheca sorghi* and *S. cruenta* 825–838
Metabolism—
basal—
effect of age and sex on 946–947
of humans and pigs 946–947
of Mature Chickens, and Net-energy Value of Corn: H. H. Mitchell and W. T. Haines 927–943
variation for sexes 934
cattle, experiments in measuring heat production 865–878
Nitrogen, of Steers on Rations Containing Alfalfa as the Sole Source of the Nitrogen: Harry W. Titus 49–58
Microbracon—
gemmaecola, n. sp., description and life history 740–741
spp., parasites of pine tip moth 616
Microorganisms, Soil. *See* Soil Microorganisms.
Milk—
bacterial counts after sterilization of milking machines 29–31
constants, determination 375–380
coagulation in stomach, study review 771
flow. *See* Lactation.
heating, effect on quality of buttermilk 782–783
homogenizing, effect on quality of buttermilk 783
human, constituents, comparison with milk of cow 771
of lime, use in Bordeaux mixture 678, 679, 680, 681–683, 684, 685
persistence—
constants, determination 375–380
lactation curve, note 382
measurement, comparison of methods 380–381
secretion, study 373–383
souring—
effect of sodium salts on quality of buttermilk 777–781
whey, accumulation 772
Milking machines—
review of study 27–28
rubber parts, life during sterilization 32–33
Sterilizing, Heat Method Variations: L. H. Burgwald 27–33
Miller, J. M., and Patterson, J. E.: Preliminary Studies on the Relation of Fire Injury to Bark-beetle Attack in Western Yellow Pine 597–613
Millet—
Kursk, water requirement, experimental results 1111, 1112, 1114, 1126, 1137
water requirement—
effect of season 1148–1151, 1153–1154, 1158–1159, 1161–1163
experimental results 1101, 1104, 1122–1123, 1131–1132, 1139–1140, 1144–1146
Milo, smut—
comparison with covered kernel smut of sorghum 825–836
fungus, identity study 832–836
"Mistletoe burn," Oregon, fire and insect damage 598–609
Mitchell, H. H.—
and Haines, W. T.—
Basal Metabolism of Mature Chickens and Net-energy Value of Corn 927–943
Critical Temperature of the Chicken 549–557
Card, L. E., and Haines, W. T.: Effect of Age, Sex, and Castration on Basal Heat Production of Chickens 945–960
Keith, M. Helen, and Card, L. E.: Rate of Passage of Food Through Digestive Tract of Hen 759–770
Moisture—
quantity in digestive tract of hen 766–768
relation to sweet-potato diseases 903, 911
soil. *See* Soil moisture.

Mold, bread— Page
destruction in baking, discussion 1020-1021
Red Fungi of *Monilia sitophila* Group, Life Histories and Heterothallism: C. L. Shear and B. O. Dodge 1019-1042
Molds—
historical notes on study 1019-1021
Water, Two, Causing Tomato Rootlet Injury: Charles Drechsler 287-296
Moller, Alfred, study of bread mold, note 1021
Monilia—
life history and taxonomy, study 1021-1027
sitophila—
enzymes produced by 1021
Group, Red Bread-mold Fungi, Life Histories and Heterothallism: C. L. Shear and B. O. Dodge 1019-1042
Mont., historical review 1019-1021
spore germination, effect of heat 1030-1031
See also Bread-mold fungus.
Mononchs—
food habits 278-282
Life History—
Habits, and Economic Importance: Gerald Thorne 265-286
in field 276-277
number and depths in two fields 270-273
parasites of, notes 278, 282
Morphology—
pecan flowers, study 687-696
Phragmidium imitans 857-858
Morris, H. E., and Swingle, D. B.: Injury to Growing Crops Caused by the Application of Arsenical Compounds to the Soil 59-78
Morse, Fred W.: Cranberries, Canned, Discoloration 889-892
Moth—
Gipsy, Parasite, *Apanteles melanoscelus* (Ratzeburg), Parasitism by New Species and New Forms of Ichneumonidae: R. A. Cushman 453-458
Grain. *See* Angoumois grain moth.
pine tip—
parasites, classification and identification key 616-622
Rhyacionia frustrana (Comstock), Four New Parasites: A. B. Gahan 545-548
Rhyacionia frustrana (Comstock), Parasites of: R. A. Cushman 615-622
Rhyacionia frustrana (Comstock), Three New Hymenopterous Parasites: R. A. Cushman 739-741
Mottle Necrosis of Sweet Potatoes: L. L. Harter and W. A. Whitney 893-914
Mottling, Soy Beans, Hereditary and Environmental Factors That Produce: F. V. Owen 559-587
Muesebeck, C. F. W.: New Species of Chalcid Flies Parasitic on the Gipsy-moth Parasite, *Apanteles melanoscelus* (Ratzeburg) 331-333
Mustard—
plants, chemical composition, analyses results 1082-1083
spraying with sulphuric acid, experimental results 1069-1071, 1073-1080
Mutton, protein, nutritive value, experimental results 300, 301

Nasturtiums, spraying for aphids, experiments and results 730-757
Necrosis, mottle—
control in sweet potatoes 911
history and geographical distribution 893-894
Sweet Potatoes: L. L. Harter and W. A. Whitney 893-914
symptoms and causal fungi 894-898
Nemas—
infestation of soils 265-278, 282, 285-286
need of and response to water 283, 286
number and species found in two fields 270
reaction to soil temperatures 277, 285, 286
sugar-beet, relation to mononchs, study 265-286
Net energy—
corn, value in metabolism of chicken, study 927-943
value of corn, data from study of chickens 942

Neurospora— Page
crassa, ascospores, germination study 1031-1036
gen. nov., description 1025-1026
n. spp., description 1026
perithecia resulting from mating haplonts of different species 1037-1039
spp., culture studies 1029-1037
New England, forests, chestnut replacement 643-644
New Jersey, forests, chestnut replacement 644-646
Nightshade, water requirement of late-season plants 1111, 1113
Nitrate—
Content of Field Soils, Effect of Applications of Cyanamid: F. E. Allison 657-662
soil, relation to ammonium sulphate 658-662
Nitrogen—
cereal, proportion in ungerminated kernels 317-323
Compounds of the Rice Kernel as Compared with Those of Other Cereals: S. L. Jodidi 309-325
determination in corn seedlings 652
extraction from rice, methods and percentage 312-316
Metabolism—
Steers, on Rations Containing Alfalfa as the Sole Source of the Nitrogen: Harry W. Titus 49-58
steers, relation between nitrogen content of excreta and feed 57-58
nonprotein, distribution in rice kernel 316
peptide, estimation procedure 315
production, experiments and results 657-662
supply, relation to mottling in soy beans 569-571
tomato—
plant, determination 99-100
plants, percentage after phosphorus treatment 105, 106, 112, 115
Nitrogenous Compounds, Organic, Isolation and Identification in Etiolated Corn Seedlings: S. L. Jodidi 649-656
"Nitrogen-starved" plants, characteristics, discussion 125
North Dakota, wheat, study of protein content 158-165
"Nubbins," strawberry, cause 393
Nut, Pecan, *Hicoria pecan*, Development from Flower to Maturity: J. G. Woodroof and Naomi Chapman Woodroof 1049-1063
Nutrition, animal, metabolism of steers 49-58

Oak—
growth in replacement of chestnut in blight areas 643
scrub, disappearance under shade 644
Oatmeal, protein, nutritive value, experimental results 300, 301
Oats—
Corn Silage, Soy-bean Hay, and Alfalfa Hay, Net-energy Values: E. B. Forbes, Winfred W. Braman, Max Kriss, J. August Fries, C. D. Jeffries, R. W. Swift, Rowland B. French, and J. V. Maucher, jr. 785-796
efficiency in use of water 1164-1165
injury by arsenicals in water culture 60-62
nitrogen proportion in ungerminated kernel 317-323
spraying with sulphuric acid, experimental results 1073-1080
water requirement—
effect of season 1148-1151, 1154, 1158-1159, 1161-1163
experimental results 1100, 1119-1120, 1126, 1130-1131, 1137-1138, 1143-1146
index number 1147
Ohio, corn ear rot in, experimental results 358
Oidium aurantiacum. *See Monilia sitophila*.
Oil—
cottonseed content, relation to gossypol content 987-991
Petroleum, Drops, Size, Relation to Toxicity of Petroleum-oil Emulsions to Aphids: Edward L. Griffin, Charles H. Richardson, and Robert C. Burdette 727-738

Page

Oils, miscible, use as sprays, preparation and toxicity ... 727–728
Orange leaf rust. *See* Rust, orange leaf.
Oranges, content of vitamin C (in table) ... 391
Oregon—
"Chinquapin burn," timber losses by fire and insects ... 610–611
"Mistletoe burn," timber losses by fire and insects ... 598–610
"Siskiyou burn," timber losses by fire and insects ... 611–612
Oryza sativa. *See* Rice.
Oviposition, Rate of Grape Leaf Hoppers: Chester I. Bliss ... 847–852
Owen, F. V.: Soy Beans, Mottling, Hereditary and Environmental Factors in Production ... 559–587
Oxygen, percentage in respiratory exchange of cattle ... 868–869

Palm, hat, host, new, of coconut bud rot ... 879–888
Palms—
coconut. *See* Coconut palms.
spp., bud rots, causes ... 886–887
Paper pulp, feeding to steers in metabolism experiment ... 49–51, 57, 58
Paraffin Used as Coating to Decrease Injurious Action of Lead Arsenate on Plant Roots, Effect of Soil Microorganisms on: Walter E. Fleming ... 335–338
Paraleyrodes naranjae, n. sp., description and life history ... 853–854
Parasite—
Jointworm, *Harmolita tritici* (Fitch), *Eurytoma parva* (Girault) Phillips on Wheat, and Its Biology: W. J. Phillips ... 743–758
Moth, Gipsy, *Apanteles melanoscelus* (Ratzeburg), Parasitism of New Species and New Forms of Ichneumonidae: R. A. Cushman ... 453–458
Parasites—
citrus white fly, remarks ... 855
intestinal, removal from animals ... 839–845
Jointworms, American, Two Hymenopterous: W. J. Phillips and F. W. Poos ... 473–488
Moth—
identification key for pine-tip kinds ... 620–622
Pine-tip, *Rhyacionia frustrana* (Comstock): R. A. Cushman ... 615–622
Pine-tip, *Khyacionia frustrana* (Comstock), Four New Chalcidoid: A. B. Gahan ... 545–548
Pine-tip, *Rhyacionia frustrana* (Comstock), Three New Hymenopterous: R. A. Cushman ... 739–741
rootlet, tomato parasites, study ... 287–296
wheat pests ... 473–478
Parasitism upon the Gipsy-moth Parasite, *Apanteles melanoscelus* (Ratzeburg), of New Species and New Forms of Ichneumonidae: R. A. Cushman ... 453–458
Pasteurella boviseptica, potency tests of chemicals against ... 625–626
Patterson, J. E., and Miller, J. M.: Preliminary Studies on the Relation of Fire to Bark-beetle Attack in Western Yellow Pine ... 597–613
Pea, pigeon. *See* Pigeon pea.
Peach, control of vitamin C, note ... 385
Peaches, antiscorbutic quality, note ... 385
Pear—
and Apple Trees, Canker Caused by *Glutinium macrosporum*, n. sp.: S. M. Zeller ... 489–496
fungus, cause of canker, description ... 489–490
trees, inoculation with canker fungus ... 490–491
Pears—
canning—
destruction of vitamin C, experimental results ... 386–391
methods ... 386
Fresh and Canned, Vitamin C Content: Verral C. Craven and Martha M. Kramer ... 385–392
raw, prevention of scurvy, experimental results ... 386–391

Page

Peas—
field, injury by arsenicals added to soil ... 72–73
immunity to injury by sulphuric acid ... 1072
parasite causing injury to tomato rootlets ... 287–288
Pecan—
buds, differentiation, time and process ... 692–696
color markings in maturity ... 1059–1060
embryo development ... 1055–1057
hull, origin and thickness ... 1052
nut—
development as seed ... 1057–1058
(*Hicoria pecan*), Development from Flower to Maturity: J. G. Woodroof and Naomi Chapman Woodroof ... 1049–1063
nuts—
chemical changes during growth ... 1058–1059
color markings, formation and relation to faultiness ... 1060–1061, 1062
Pistillate Flowers, Morphological Differentiation: D. V. Shuhart ... 687–696
pollination, notes ... 1049, 1050–1051
review of studies ... 1049
shell, origin and development ... 1052–1054
trees, terminal buds, types ... 689–691
Pecans—
faultiness, relation to color markings and cracking strength ... 1061–1062
ripening process ... 1058–1059
Pectin—
relation to enzymes, study ... 710–711
wheat, reaction from orange leaf rust ... 703, 710–713
Pediculoides ventricosus Newport, presence in wheat ... 462
Peebles, Robert H., and Kearney, Thomas H.: Inheritance of Rate of Shedding in a Cotton Hybrid ... 921–926
Penicillium sitophilum. *See Monilia sitophila*.
Pennsylvania, forests, chestnut replacement ... 646–647
Peridermium—
indicum n. sp.—
description ... 329–330
on *Pinus excelsa* Wall. and *Peridermium kurilense* Diet. on *Pinus pumila* Pall.: Reginald H. Colley and Minnie W. Taylor ... 327–330
kurilense Diet.—
description ... 329
on *Pinus pumila* Pall. and *Peridermium indicum* n. sp. on *Pinus excelsa* Wall.: Reginald H. Colley and Minnie W. Taylor ... 327–330
spp. similarity to *Cronartium* spp. ... 328–329, 330
Peroxide, hydrogen. *See* Hydrogen.
Peterson, W. H., Priem, Lillian, and Fred, E. B.: Studies of Commercial Sauerkraut with Special Reference to Changes in the Bacterial Flora During Fermentation at Low Temperatures ... 79–95
Petroleum-oil Emulsions, Toxicity to Aphids, Relation of Size of Oil Drops: Edward L. Griffin, Charles H. Richardson, and Robert C. Burdette ... 727–738
Phanerotoma rhyacioniae—
description and life history ... 740
parasite of pine tip moth ... 618
Phaseolus spp. *See* Beans.
Phillips, W. J.—
and Poos, F. W.: Two Hymenopterous Parasites of American Jointworms ... 473–488
Eurytoma parva (Girault) Phillips and Its Biology as a Parasite of the Wheat Jointworm, *Harmolita tritici* (Fitch) ... 743–758
Phosphorus—
Effect on Composition of Tomato Plant: John H. MacGillivray ... 97–127
relation to mottling in soy beans ... 562
tomato plant, distribution and—
amount, after phosphorus and no-phosphorus treatments ... 104, 105, 110, 111, 115
discussion ... 120–121
Phragmidium imitans—
Cause of Yellow Rust of Raspberry: S. M. Zeller ... 857–863
morphology ... 857–858
Phytometry, value in determining water requirement of plants ... 1167–1169

Phytophthora palmivora— Page
cause of coconut bud rot 879–888
chlamydospores from bud rot of palms, dimensions 884
Piemeisel, Lydia N. and Shantz, H. L.: Water Requirement of Plants at Akron, Colo. 1093–1190
Pig Litters, Sex Ratio and Frequency of Sex Combinations, Swine Herdbook as Source of Data for Investigations: Hugh C. McPhee 715–726
Pigeon Pea—
Anthracnose: C. M. Tucker 589–596
losses from anthracnose 590–592
Pigments—
anthocyanin, development factors in soy bean 561–563
cause of mottling of soy bean 560–563
nontransfer in plant grafting 675, 676
Pigs. *See* Swine.
Pigweed—
efficiency in use of water 1164–1166
water requirement—
effect of season 1150–1151, 1155, 1158–1159, 1161–1163
experimental results 1109–1110, 1126, 1135–1136, 1142–1145
Pine—
needles, susceptibility to blister rust, age as factor 507–508
rust. *See* Rust; Rusts.
tip moth. *See* Moth, pine tip.
Western Yellow, Preliminary Studies on Relation of Fire Injury to Bark-beetle Attack: J. M. Miller and J. E. Patterson 597–613
Pineapple, content of vitamin C (in table) 391
Pinus—
excelsa Wall., *Peridermium indicum* n. sp. on, and *Peridermium kurilense* Diet. on *Pinus pumila* Pall: Reginald H. Colley and Minnie W. Taylor 327–330
pumila Pall., *Peridermium kurilense* Diet. on, and *Peridermium indicum* n. sp. on *Pinus excelsa* Wall.: Reginald H. Colley and Minnie W. Taylor 327–330
spp., rusts attacking, comparison 516
strobus. Inoculation with the Sporidia of *Cronartium ribicola*, Results: Harlan H. York, Walter H. Snell, and Annie Rathbun-Gravatt 497–510
See also White pine.
virginiana, tip moth infestation, parasites experiments 615
Pisum sativum. *See* Peas.
Plant—
Disease, Homopterous Vectors, a Technic for Use, with Special Reference to the Sugar-beet Leaf Hopper, *Eutettix tenellus* (Baker): Walter Carter 449–451
Roots, Injurious Action by Lead Arsenate, Effect of Soil Microorganisms on Paraffin Used as Coating to Decrease: Walter E. Fleming 335–338
tissues, stimulating effect on germination of spores 137–143
Plants—
adaptability, measuring by phytometry 1167–1169
anatomy, dissection of beet parts 4–7
disease resistance, loss of 198
grafting, effect of longevity, pigment transfer, and seed specificity 673–676
growth—
correlation with water requirement 1160
effects of arsenical additions to soil 69–76, 77
poisoning by—
arsenic in soil 59–60
lead arsenate, prevention experiments 335–337
potted, growth affected by addition of arsenical compounds to soil 69–71
spraying—
quantity of oil retained, experimental results 736
with sulphuric acid, discussion of effects 1084–1087
sterility and fertility, in the strawberry 393–411
Tomato. *See* Tomato plant.
transpiration, effects of arsenical additions to soil 62–69
Plants—Continued. Page
Water Requirement—
at Akron, Colo.: H. L. Shantz and Lydia N. Piemeisel 1093–1190
based on dry matter 1172–1176, 1180–1184
effect of shelter 1095–1096
errors, probable, in computation 1186–1187
index numbers 1147
Platz, G. A., Durrell, L. W., and Howe, Mary F.: Effect of Carbon Dioxide upon the Germination of Chlamydospores of *Ustilago zeae* (Beckm.) Ung. 137–147
Plectospira—
myriandra—
n. sp., tomato rootless parasites, discussion 288–296
occurrence, morphology, and taxonomy 288–294
n. g., diagnosis 294, 295–296
spp., diagnosis 294, 295–296
Poa—
pratensis and *Poa compressa*, Development of the Female Gametophyte and Caryopsis: Alice M. Andersen 1001–1018
See also Bluegrass.
Pod spot, pigeon pea, study 589–596
Poison—
arsenic, effect on plants 59–60
Fusarium, cause of wilt in plants, discussion 231–233
Poisons, leaf roller, kinds and methods of use 155–156
Polanisia, water requirements 1111, 1112
Pollen, failure and effectiveness in strawberry 393
Polygonum, water requirement of late-season plants 1111, 1113
Poos, F. W., and Phillips, W. J.: Two Hymenopterous Parasites of American Jointworms 473–488
Popillia japonica Newm. *See* Beetle, Japanese.
Pork, protein, nutritive value, experimental results 300, 301
Porthetria dispar L. *See* Flies, chalcid.
Porto Rico—
Citrus, Attack of Undescribed White Fly: H. L. Dozier 853–855
White Fly, Undescribed, Attacking Citrus: H. L. Dozier 853–855
Potatoes—
injury by arsenicals added to soil 73
Sweet. *See* Sweet potatoes.
water requirement, experimental results 1125–1126, 1134–1135
Poultry energy-metabolism studies 549–557
See also Chickens; Ducks; Geese.
Precipitation, effect on water requirement of plants 1153
See also Rainfall.
Priem, Lillian A., Peterson, W. H., and Fred, E. B.: Studies of Commercial Sauerkraut with Special Reference to Changes in the Bacterial Flora During Fermentation at Low Temperatures 79–95
Protein—
Beef, Value as a Supplement to the Proteins in Certain Vegetable Products: Ralph Hoagland and George G. Snider 297–308
Content—
in Hard Red Spring Wheat, Study of Dark Hard Kernels: G. E. Mangels 157–166
of cottonseed, relation to maturity 989
flour, correlation with dry gluten percentage 259
meat, mixture with vegetable protein, experimental results 302–306
meat, mixture with vegetable protein, study 302–306
rice, quality 310
wheat content, relation to loaf volume of bread 245–248
Protein—
animal and vegetable, nutritive value, experimental results 299–307
cereal, nutritive value, experimental results 297–308
meat, nutritive value, experimental results 297–308

Protein—Continued. Page
nutritive value, effect of combinations.... 297, 302–306
Pseudomonas pyocyanea, destruction with chloroform.... 625
Pteromalidae, family, descriptions, type, host, etc.... 331–332
Puccinia—
spp., dependence on carbohydrates, note.. 193–194
triticina. *See* Rust, orange leaf.
Pullets, heat production, basal, experimental results.... 952, 954
Pumping from Deep Wells, Effect on Ground-water Table: Walter W. Weir.. 663–672
Pumps, effectiveness for drainage and irrigation, experimental results.... 663–672
Pupa, pine tip moth, parasites.... 619
Pythium—
aphanidermatum, Cause of Transit Disease of Snap Beans: L. L. Harter and W. A. Whitney.... 443–447
debaryanum, cause of potato leak.... 904
fungus, growth in sweet potato.... 903–904
sporangia of, taxonomic notes.... 294, 295–296
spp.—
cause of mottle necrosis of sweet potatoes.... 897–898
growth, limits in temperature.... 444
parasitism.... 447
parasitism tests on sweet potatoes.... 898–902
pathogenicity, discussion.... 445–446

Quicksand, California, San Joaquin Valley, note.... 663
Quisenberry, K. S. and Garber, R. J.—
Inheritance of Length of Style in Buckwheat.... 181–183
Self-fertilization in Buckwheat.... 185–190

Rainfall—
effect on infection of pigeon pea with anthracnose.... 591
influence on effect of sprays.... 1080
intensities, probable frequency.... 820
measurements.... 801–818
relation to run-off, factors affecting.... 819
Run-off from Small Agricultural Areas: C. E. Ramser.... 797–823
Ramser, C. E.: Run-off from Small Agricultural Areas.... 797–823
Raspberry—
losses from yellow rust, and its control... 861–863
Yellow Rust, Caused by *Phragmidium imitans*: S. M. Zeller.... 857–863
Rathbun-Gravatt, Annie, York, Harlan H., and Snell, Walter H.: Results of Inoculating *Pinus strobus* with the Sporidia of *Cronartium ribicola*.... 497–510
Rations, Steers, Alfalfa Content the Sole Source of the Nitrogen, Effect on Nitrogen Metabolism: Harry W. Titus.... 49–58
See also Feeds.
Red clover, immunity to injury by sulphuric acid.... 1072
Rhabditis, food of mononchs, notes.... 278, 282
Rhizoctonia solani Kuhn, cause of sweet-potato disease.... 911–912
Rhyacionia frustrana (Comstock). *See* Moth, pine tip.
Ribes spp., hosts of white pine blister rust.. 498–500, 508–509
Rice—
acidity of different varieties.... 313
amino acid in.... 314–315
analysis review.... 309–310
constituents, analytical results.... 309–312
Kernel, Nitrogen Compounds as Compared with Those of Other Cereals: S. L. Jodidi.... 309–325
nutritive value.... 310
protein quality, note.... 310
Richardson, Charles H., Burdette, Robert C., and Griffin, Edward L.: Relation of Size of Oil Drops to Toxicity of Petroleum-oil Emulsions to Aphids.... 727–738
Robinson— Page
G. W., proposal for use of hydrogen peroxide in soil analysis.... 340
W. O.: Determination of Organic Matter in Soils by Means of Hydrogen Peroxide.... 739–356
Roller, leaf. *See* Leaf roller.
Roots—
anatomy, methods, and materials for study.... 534
apple, nutrition points for germs.... 543
Rootlet, Tomato, Injury by Two Water Molds: Charles Drechsler.... 287–296
Roots—
adventitious, of apple, relation to vascular system.... 533–544
formation on stems of trees, comparisons.. 541, 543
Plant. *See* Plant Roots.
Rot—
apple, cause.... 495
bean, kind caused by *Pythium aphanidermatum*.... 444
coconut-bud—
description of organism causing.... 881–885
Fungus Host, *Sabal causiarum* (Cook) Beccari: C. M. Tucker.... 879–888
rootlet, of sweet potatoes, cause and spread.... 902–903
Stem, of Sweet Potatoes—
Comparative Susceptibility of Varieties: L. L. Harter and W. A. Whitney.... 915–919
Relation of Soil Temperature and Soil Moisture to Infection: L. L. Harter and W. A. Whitney.... 435–441
watery soft, of snap beans, kinds, comparison.... 443
white, of sweet potatoes, distinction from mottle necrosis.... 893–894
Rots, bud. *See* Bud-rot; Bud rots.
Roughage, feeding experiments with cattle.. 786–795
Rubber, protection against high temperature.... 33
Rubus, spp. *See* Raspberry.
Run off—
rate, factors affecting.... 799
Small Agricultural Areas: C. E. Ramser.. 797–823
See also Drainage.
Rust—
blister, of white pine, study.... 497–510
orange leaf—
of wheat, note on origin.... 697
Puccinia triticina Physiologic Form 11, on Malakoff Wheat, Cytological Study: Ruth F. Allen.... 697–714
pinon pine. *See* Cronartium spp.
wheat, effect on water requirement, note.. 1159
Yellow, of Raspberry—
Caused by *Phragmidium imitans*: S. M. Zeller.... 857–863
economic importance and control.... 861–863
Rusts—
dependence on carbohydrates, note.... 193–194
development, effect of light and shade... 193
pine, morphologic and biometric comparisons of the aecial stage.... 511–531
Rye—
efficiency in use of water.... 1164–1165
nitrogen, proportion in ungerminated kernels.... 317–323
water requirement—
effect of season... 1150–1151, 1158–1159, 1161–1163
experimental results.... 1100, 1119–1120, 1130–1131, 1137–1138, 1144–1146

Sabal causiarum (Cook) Beccari: New Host of Coconut Bud-rot Fungus: C. M. Tucker.... 879–888
Salts, sodium, effect on quality of buttermilk.... 777–781
Santonin—
Anthelmintic Properties: Jacob E. Shillinger.... 839–845
differences, sources, and cultivation in United States.... 840
Saprolegniaceae, taxonomic discussion.... 293

Page

Sauerkraut—
bacterial flora, review of study 79-81
Commercial, Studies with Special Reference to Changes in the Bacterial Flora During Fermentation at Low Temperatures: Lillian A. Priem, W. H. Peterson, and E. B. Fred 79-95
fermentation, function of yeasts 81
gas formation in 88-89
"pink," cause of infection 81
Sclerotinia spp., similarity to *Pythium* 443, 444
Scurvy—
prevention by vitamin C, dosage, etc. 385, 387-391
symptoms in feeding experiments 387-390
Season, effect on water requirement of plants 1147-1151, 1159-1161
Secale cereale. *See* Rye.
Secodella subopaca, n. sp., description 548
Second Early Adams corn, fitness for roasting ears, etc. 417, 419, 424, 429, 430
Seed—
age of, relation to water requirements 1118-1119
barley, inoculation with loose smut in several conditions 995-996
beet, description 22-24
bush, sugar beet, development 1-4
coats, soy-bean, pigments in chemical reactions 560-561
corn—
composition 650
drying, effect on spread of ear rot 360
infection injury 364-370
infection, relation to stand, yield, etc. 362-370
injury by Fusaria and Diplodia 361
mottled, of soy bean, distribution on plant and in pod 563-566
production, relation to water requirement 1177-1178
soy-bean, maturation, effect of mottling 584
Sugar Beet, and Flowers, Development: Ernest Artschwager 1-25
tomato—
effect of phosphorus on development, weight, etc. 123-124
formation and weight, effect of phosphorus 122-124
phosphorus-treatment, effect on growth of plants 110
Seedlings—
corn. *See* Corn seedlings.
wheat, resistance to orange leaf rust 706, 711
white pine, inoculation with blister rust, results 497-505
Seeds—
bluegrass, germination 1001
buckwheat, number produced in self-fertilization 187-189
cotton—
constituents, relation to maturity 989-991
Gossypol Content and Chemical Composition during Certain Periods of Development: Willis D. Gallup 987-992
formation, effect of phosphorus 122
Self-fertilization, Buckwheat: R. J. Garber and K. S. Quisenberry 185-190
Sex—
Castration, and Age, Effect on Basal Heat Production of Chickens: H. H. Mitchell, L. E. Card, and W. T. Haines 945-960
Ratio and Frequency of Sex Combinations in Pig Litters, Swine Herdbook as Source of Data for Investigation: Hugh C. McPhee 715-826
sterility, correlation with stamen production 397
strawberry, expression in hermaphrodite varieties 401, 410
Shade, relation to mottling in soy beans 576
Shantz, H. L., and Piemeisel, Lydia N.: Water Requirement of Plants at Akron, Colo. 1093-1190
Shear, C. L., and Dodge, B. O.: Life Histories and Heterothallism of Red Breadmold Fungi of *Monilia sitophila* Group 1019-1042

Page

Shedding, Cotton Hybrid, Inheritance of Rate: Thomas H. Kearney and Robert H. Peebles 921-926
Shell, pecan nut, structure and development 1052-1055, 1057
Shelter, effect on water requirement of plants 1095-1096
Shillinger, Jacob E.: Anthelmintic Properties of Santonin 839-845
Shuhart, D. V.: Morphological Differentiation of Pistillate Flowers of Pecan 687-696
Silage, corn. *See* Corn silage.
Simmons, Perez, and Ellington, George W.: Dispersion of the Angoumois Grain Moth to Wheat Fields 459-471
Sitotroga cerealella Oliv. *See* Angoumois Grain Moth.
Smut—
kernel, susceptibility of milo varieties 826-827
loose—
barley, control by disinfectants 993
barley, effects on germination and growth 994-1000
kernel, on feterita 836-838
milo, susceptibility of sorghum, etc. 828-831
sorghum kernel, morphology, study 832-836
(*Ustilago zeae*), Effect on the Sugar Content of Cornstalks: Annie May Hurd-Karrer and Heinrich Hasselbring 191-195
Smuts, Kernel, of Sorghum, *Sphacelotheca sorghi* and *S. cruenta*: W. H. Tisdale, L. E. Melchers, and H. J. Clemmer 825-838
Snap beans. *See* Beans.
Snell, Walter H., Rathbun-Gravatt, Annie, and York, Harlan H.: *Pinus strobus*, Results of Inoculating with Sporidia of *Cronartium ribicola* 497-510
Snider, George G., and Hoagland, Ralph: Value of Beef Protein as a Supplement to the Proteins in Certain Vegetable Products 297-308
Sodium salts, effect on quality of buttermilk 777-781
Soil—
depth preferences of mononchs 283, 285
effect on productivity in strawberry plants 399
Microorganisms, Effect on Paraffin Used as a Coating to Decrease Injurious Action of Lead Arsenate on Plant Roots: Walter E. Fleming 335-338
Moisture—
and Soil Temperature, Relation to the Infection of Sweet Potatoes by the Stem-rot Organisms: L. L. Harter and W. A. Whitney 435-441
content, determination 267
importance of nemas 277, 278, 283-285
influence on sprays 1076-1079
relation to infection with stem rot 439-441
Temperature and Soil Moisture, Relation to the Infection of Sweet Potatoes by the Stem Rot Organisms: L. L. Harter and W. A. Whitney 435-441
Treatment with Arsenical Compounds, Injury to Growing Crops: H. E. Morris and D. B. Swingle 59-78
Soils—
analysis—
combustion method, comparison with hydrogen-peroxide method 349-351
method with hydrogen peroxide 340-342
arsenic in, injury to soils 59-78
ash constituents 343
bacteria, remarks 337-338, 675, 676
cranberry-bog, moisture and nitrate nitrogen in 45
erosion, study of run-off from small areas 797-823
Field, Nitrate Content, Effect of Applications on Cyanamid: F. E. Allison 657-662
nitrate, relation to cyanamid, etc., study 657-662
organic matter—
decomposition, extent with hydrogen peroxide 342-343
Determination by Means of Hydrogen Peroxide: W. C. Robinson 339-356

Soils—Continued. Page
relation to—
fruit setting in strawberry 399, 402
mottling in soy beans 560, 563, 571–576
sweet potato diseases 913
weight, loss from hydrogen-peroxide treatment 339, 341
Soja max. *See* Soy beans; Soy-bean.
Solanum—
rostratum. *See* Buffalo bur.
triflorum. *See* Nightshade.
tuberosum. *See* Potatoes.
Sorghum—
Andropogon, water requirement 1103–1104
efficiency in use of water 1164–1165
Kernel Smuts, *Sphacelotheca sorghi* and *S. cruenta*: W. H. Tisdale, L. E. Melchers, and H. J. Clemmer 825–838
varieties, susceptibility to kernel smuts 828–831
water requirement—
effect of season 1148–1151, 1158–1159, 1161–1163
index number 1147, 1153, 1154
Sorghums, water requirement, experimental results 1101, 1103–1104, 1122–1123, 1131–1132, 1135, 1137, 1139–1140, 1143–1146
Sorgo. *See* Sorghum; Sorghums.
Soy beans—
cross fertilization, effect on mottling 583
inoculation, relation to mottling 575–576
Mottling—
Hereditary and Environmental Factors: F. V. Owen 559–587
physiological conditions as factors 566–569
progeny tests on several soils 571–576
oil content, note 987–988
pigment in seed coats, chemical reactions 560–561
shading, relation to mottling of seed 576
spacing of rows, relation to mottling of seed 574–575
wilt caused by *Fusarium lycopersici* 227–232
Soy-bean Hay, Alfalfa Hay, Oats, and Corn Silage, Net-energy Values: E. B. Forbes, Winfred W. Braman, Max Kriss, J. August Fries, C. D. Jeffries, R. W. Swift, Rowland B. French, and J. V. Maucher, jr. 785–796
Spaeth, C. P., and Kraybill, H. R.: Biochemical Study of False-blossom Disease of the Cranberry 35–47
Spacelotheca—
cruenta. See *S. sorghi*.
sorghi and *S. cruenta*, Strains of Kernel Smuts of Sorghum: W. H. Tisdale, L. E. Melchers, and H. J. Clemmer 825–838
spp., morphology and hybrids 832–836
Spores—
germination—
acidity changes 144–146
effect of heat 1030–1031
stimulation by carbon dioxide, discovery and study 137–146
stimulation by plant tissues 137–140
Glutinium macrosporum, n. sp., description and germination 492–494
pine rust, morphologic and biometric comparisons 511–531
raspberry-rust, germination 861
Ustilago zeae, germination, effect of plant tissue on 138–143
Sporidia, blister rust—
Cronartium ribicola, Inoculating *Pinus strobus* with, Results: Harlan H. York, Walter H. Snell, and Annie Rathbun-Gravatt 497–510
germination, effect of temperature and humidity 506
viability when dried 501
Sporogenesis, study 9–22
Spray—
lead arsenate, preparation 1043–1044
Sulphuric Acid for Weeds: Alfred Åslander 1065–1091
Spraying, petroleum-oil emulsions, factors affecting toxicity to aphids 727–728, 737
Sprays—
beetle, Japanese, toxicity of acid lead arsenate 1043–1047
Sprays—Continued. Page
effect of, discussion 1084–1086
insect, use against strawberry leaf roller 155–156
Staminodia, production on strawberry plants 393
Starch—
corn, conversion from sugar 427
grains, study in grafted plants 674
Steers—
Nitrogen Metabolism on Rations Containing Alfalfa as the Sole Source of the Nitrogen: Harry W. Titus 49–58
See also Cattle.
Stem Rot. *See* Rot, stem.
Sterility—
and Fertility in the Strawberry: George M. Darrow 393–411
forms not found in strawberry 393
strawberry plant, relation to fall conditions 403–409
Sterilizing Milking Machines, Heat Method Variations: L. H. Burgwald 27–33
Stickel, Paul W. and Korstian, C. F.: Natural Replacement of Blight-killed Chestnut in Hardwood Forests of Northeast 631–648
Stictonotus isosomatis. *See Eridontomerus isosomatis*.
Storage, sweet potato, relation to mottle necrosis 910–911, 912
Straw, source of Angoumois grain moth 461, 462, 463–464, 465, 466, 471
Strawberries—
injury by leaf roller 152
sterility of varieties and its cause 390–402
Strawberry—
freedom from self-sterility and cross sterility 393
injury by frost 404
leaf roller. *See* Leaf roller.
origin and breeding 344–396
pistillate flowers 397
plants, hermaphrodite, fertility in 1850 393
sex type, relation to species 393–397
staminodia production 393
Sterility and Fertility: George M. Darrow 393–411
Streptococcus lactis, use in souring milk 774–777
Sturtevant—
classification of corn, remarks 413
study of measure of milk persistence 373
Style, Buckwheat, Inheritance of Length: R. J. Garber and K. S. Quisenberry 181–183
Sudan grass—
efficiency in use of water 1164–1166
water requirement—
effect of season 1150–1151, 1158–1159, 1161–1163
experimental results 1104, 1122–1123, 1126, 1131–1132, 1139–1140, 1143, 1144–1145
Sugar—
beet. *See* Beet, sugar.
content of—
corn for canning, etc 423, 431–432
Cornstalks, Effect of Smut (*Ustilago zeae*) on: Annie May Hurd-Karrer and Heinrich Hasselbring 191–195
Sugars—
relation to mottling in soy beans 562
tomato plant—
effect of phosphorous starvation on 125–126
hydrolysis 160
Sulphate—
ammonium, effect on nitrate content of soil 658–662
iron, spray, effect on weeds 1080–1081
Sulphuric Acid—
as Weed Spray: Alfred Åslander 1065–1091
effect on grain and peas 1072
spray effect on mustard 1069–1071, 1073–1080
Sunflower, water requirement, experimental results 1135, 1136
Sweet—
corn—
characters 414
chemical studies 419–427
flowering, discussion 416–419
Quality Determining Factors, Study: C. W. Culpepper and C. A. Magoon 413–433
tests of quality in canning 428

Sweet—Continued. Page
potatoes—
decay, effect of temperature 904-909
hotbed, source of disease 902-903, 911
infection with stem rot, mechanism 440-441
losses from mottle necrosis 894
Mottle Necrosis: L. L. Harter and W. A. Whitney 893-914
Stem Rot—
Comparative Susceptibility of Varieties: L. L. Harter and W. A. Whitney 915-919
Relation of Soil Temperature and Soil Moisture to Infection by the Organisms: L. L. Harter and W. A. Whitney 435-441
varieties, inoculation tests with rot fungi 899-902
varieties, resistance to mottle necrosis 911
varieties resistant to stem rot 918-919
Swift, R. W., French, Rowland B., Maucher, J. V., jr., Forbes, E. B., Braman, Winfred W., Kriss, Max, Fries, J. August, and Jeffries, C. D.: Net-energy Values of Corn Silage, Soy-bean Hay, Alfalfa Hay, and Oats 785-796
Swine—
Herdbook, Source of Data for Investigation of Sex Ratio and Frequency of Sex Combinations in Pig Litters: Hugh C. McPhee 715-726
worms removal with santonin, tests 843-844
Swingle—
Charles F.: Burrknot Formations in Relation to the Vascular System of the Apple Stem 533-544
D. B., and Morris, H. E.: Injury to Growing Crops Caused by the Application of Arsenical Compounds to the Soil 59-78

Tannin, presence in canned cranberries 889-890
Tapeworms, removal from dogs, effectiveness of santonin 840-843
Taxonomy, Saprolegniaceae, discussion 203
Taylor, Minnie W.—
and Colley, Reginald H.: *Peridermium kurilense* Diet. on *Pinus pumila* Pall. and *Peridermium indicum* n. sp. on *Pinus excelsa* Wall. 327-330
Colley, Reginald H., and Hartley, Carl: Morphologic and Biometric Comparison of *Cronartium ribicola* and *Cronartium occidentale* in the Aecial Stage 511-531
Temperature—
Critical—
definition 549
of the Chicken: H. H. Mitchell and W. T. Haines 549-557
effect on—
bacterial flora of sauerkraut 79-95
development of wheat rust 711
growth of *Pythium* spp. 904-909
oviposition of grape leaf hoppers 849-850
sauerkraut, bacterial flora 79-95
water requirement of plants 1159-1166
influence on effect of sprays 1079-1080
relation to—
fermentation 79-95
growth of *Fusarium lycopersici* 203-210, 234
mottling in soy beans 562-563
soil—
determination 267
relation to infection with stem rot 438-439
See also Soil Temperature.
Tests, Gluten. *See* Gluten.
Tetrachlorethylene—
as an Anthelmintic for Foxes, Critical Tests: Karl B. Hanson 129-136
use against worms, comparison with carbon tetrachloride 134-136
Thistle, Canada, control with sulphuric acid 1068
Thorne, Gerald: Life History, Habits, and Economic Importance of Some Mononchs 265-286
Timber—
damage by beetles after fire 597-613
effect on run-off from watersheds 818-819

Tisdale, W. H.— Page
and Griffiths, Marion A.: Variants in *Ustilago nuda* and Certain Host Relationships 993-1000
Melchers, L. E., and Clemmer, H. J.: Strains of Kernel Smuts of Sorghum, *Sphacelotheca sorghi* and *S. cruenta* 825-838
Titus, Harry W.: Nitrogen Metabolism of Steers on Rations Containing Alfalfa as the Sole Source of the Nitrogen 49-58
Tom Thumb corn, water requirements 1111, 1112
Tomato—
blossom and fruit setting under phosphorus treatments 103, 108, 114, 121-123
Fruits, Inheritance of Ovate and Related Shapes: E. W. Lindstrom 961-985
Leaves, chlorophyll content, discussion 125
parasites, study 287-296
Plant, Composition, Effect of Phosphorus: John H. MacGillivray 97-127
plants—
dry matter and phosphorus after phosphorus treatment 111
growth under phosphorus treatments 103, 108, 114
nitrogen determination 99-100
Rootlet—
Injury by Two Water Molds: Charles Drechsler 287-296
parasites, study 287-296
seed—
and pulp, effect of phosphorus treatment 110, 122-124
ripening changes 118-120
shape indices, data 961-967, 973-981
Wilt, Caused by *Fusarium lycopersici* Sacc., Studies: Richard P. White 197-239
Tomatoes—
growth habit, relation to fruit shape 982-985
ovate shape, relation to fruit size 971-973
phosphorus content at different stages of growth 117
relations between fruit shapes and other factors 968-971
resistance to wilt—
loss of 198
study 198, 233
ripening, experiments with structural changes 116-120
rootlets, injury by Aphanomyces 287-288
shapes of fruit, experimental data 962-983
size, relation to shape of fruit 971-973
toxicity of arsenicals in soil 62-69, 70, 71, 73
varieties resistant to wilt 197
Toxicity—
Acid Lead Arsenate, on Japanese Beetle (*Popillia japonica* Newm.), Study: E. R. Van Leeuwen 1043-1047
lead arsenate for beetles, criteria 1045-1047
medicines for worms, effect of diet 135-136
Petroleum-oil Emulsions to Aphids, Relation of Size of Oil Drops to: Edward L. Griffin, Charles H. Richardson, and Robert C. Burdette 727-738
tetrachlorethylene as anthelmintic for foxes, tests 132-136
Transpiration, plants planted in arsenical soil 62-69
Trees—
damage by beetles after fire 597-613
species for replacing chestnut in blight areas 632, 636-647
Trifolium incarnatum. *See* Clover, crimson.
Triticum spp. *See* Wheat.
Tropaeolum majus, spraying for aphids 730-737
Tubers, production, relation to water requirement 1178
Tucker, C. M.—
Pigeon Pea Anthracnose 589-596
Sabal causiarum (Cook) Beccari: New Host of Coconut Bud-rot Fungus 879-888
Tulasne, L. R. and C., account of temperature relations of bread-mold fungus 1020
Tumbleweed, water requirement of late-season plants 1111, 1114

Urocystis tritici Koern., germination of spores, stimulation 137-138

Page

Ustilago—
nuda, Variants and Certain Host Relationships: W. H. Tisdale and Marion A. Griffiths ... 993–1000
zeae—
(Beckm.) Ung., Chlamydospores, Germination, Effect of Carbon Dioxide: G. A. Platz, L. W. Durrell, and Mary F. Howe ... 137–147
effect of plant tissue on the germination of spores ... 138–143
See also Smut.
Utah, soils, infestation with nemas, study ... 265–286

Vaccines, preparation, discussion ... 623–624
Vaccinium spp. *See* Cranberries.
Van Leeuwen, E. R.: Study of Toxicity of Acid Lead Arsenate on Japanese Beetle (*Popillia japonica* Newm.) ... 1043–1047
Vascular system, Apple Stem, Relation to Burrknot Formations: Charles F. Swingle ... 533–544
Vectors, Homopterous, of Plant Disease, a Technic for Use with Special Reference to the Sugar-beet Leaf Hopper, *Eutettix tenellus* (Baker): Walter Carter ... 449–451
Vegetable—
Products, Proteins in, Value of Beef Protein as a Supplement to: Ralph Hoagland and George G. Snider ... 297–308
proteins, mixture with animal proteins, nutritive value, experimental results ... 302–306
Verbena bractiosa, water requirement of late-season plants ... 1111, 1113
Vernin, identification in corn seedlings ... 654–655
Vetch, water requirement, experimental results ... 1102, 1111, 1112, 1113
Vicia spp., water requirements ... 1102, 1111, 1112, 1113
Vigna sinensis. *See* Cowpea; Cowpeas.
Vincent and Collignon, observations on effects of ether on bacteria ... 623–624
Viscosity, flour—
index of gluten quality ... 252–255
relation to loaf volume of bread ... 252–256
Vitamin C—
Content of Fresh and Canned Pear: Verral C. Craven and Martha M. Kramer ... 385–392
richness in certain fruits ... 391
usefulness in diet ... 385

Water—
ground, fluctuations, effect of pumping from deep wells ... 666–672
Molds, Two, Causing Tomato Rootlet Injury: Charles Drechsler ... 287–296
requirement—
corn varieties ... 1101–1103, 1122–1123, 1126, 1131–1132, 1137, 1139–1140, 1143–1146, 1148–1151, 1153–1154, 1158–1159, 1161–1163.
crops, summary of experimental results ... 1143–1147
plant, explanation of term ... 1093
Plants—
at Akron, Colo.: H. L. Shantz and Lydia N. Piemeisel ... 1093–1190
causes of variation ... 1170–1171
effect of season ... 1147–1166
relation of evaporation ... 1147–1166, 1169–1170
plants, summary of measurements ... 1188–1189
requirements—
in correlation with evaporation ... 1169–1171
of crops, summary of experiments at Akron, Colo ... 1103–1190
of plants, effect of shelter ... 1095–1096
range for several crops ... 1157–1159
Run-off from Small Agricultural Areas: C. E. Ramser ... 797–823
Ground Table, Effect of Pumping from Deep Wells: Walter W. Weir ... 663–672
weed, spraying with sulphuric acid, effect ... 1080–1081
Watery soft rot, kinds, comparison of ... 443
Waxy corn, canning tests, etc ... 424, 428–429
Weather—
effect on—
development of wheat rust ... 711
water requirement of crops ... 1147–1151, 1159–1169
water requirement of plants ... 1152–1166
influence on effect of sprays ... 1077–1080

Weeds—
Page
eradication, review of studies ... 1065–1066
kinds—
immune to injury by sulphuric acid ... 1068–1069
injured badly by sulphuric acid ... 1068
killed by sulphuric acid ... 1066–1068
Spray of Sulphuric Acid: Alfred Åslander ... 1065–1091
water requirements, experimental results ... 1111–1114
Weir, Walter W.: Effect of Pumping from Deep Wells on Ground-water Table ... 663–672
Wells, Deep, Pumping from, Effect on Ground-water Table: Walter W. Weir ... 663–672
Western Yellow Pine. *See* Pine.
Wheat—
contaminated, cause of molding of bread ... 1020
efficiency in use of water ... 1164–1166
Fields, Infestation with Angoumois Grain Moth: Perez Simmons and George W. Ellington ... 459–471
Gluten Quality Determination, Tests, Physical and Chemical, Comparison: D. A. Coleman, H. B. Dixon, and H. C. Fellows ... 241–264
hard red spring—
correlation between protein content and percentage of dark kernels ... 158–161
Study of Dark, Hard Kernels and Protein Content: C. E. Mangels ... 157–166
infestation of Angoumois grain moth in the field, degree ... 459–471
injury by arsenicals added to soil ... 74
Jointworm, *Harmolita tritici* (Fitch), Parasite, *Eurytoma parva* (Girault) Phillips and Its Biology: W. J. Phillips ... 743–758
kernel texture, an index of baking quality ... 242–244
kernels—
color, relation to protein content ... 157–166
ungerminated, proportion of nitrogen in ... 317–323
Malakoff, Orange Leaf Rust, *Puccinia triticina* Physiologic Form 11, Cytological Study: Ruth F. Allen ... 697–714
nitrogen, proportion in ungerminated kernels ... 317–322
pests, parasites on ... 473–488
plant, injury by jointworm parasite ... 755, 757
protein—
content, effect on market price ... 245
nutritive value, experimental results ... 300, 301
shocks, infestation with Angoumois grain moth ... 469
varieties, water requirement, experimental results ... 1097–1100, 1114–1119, 1126, 1127–1130, 1131, 1137–1139, 1143–1146
water requirement, effect of season ... 1148–1151, 1154–1155, 1158–1159, 1161–1163
Wheats, hard, marketing grades, basis ... 157
Whey, accumulation in souring of milk ... 772
Whipworms, removal from dogs, effectiveness of santonin ... 840–843

White—
Fly, Undescribed, Attacking Citrus in Porto Rico: H. L. Dozier ... 853–855
pine, inoculation with blister rust, experiments and results ... 497–510
pines, attack by *Peridermium* spp ... 327–330
Richard P.: Studies on Tomato Wilt Caused by *Fusarium lycopersici* Sacc ... 197–239
rot. *See* Rot, white.
Whitney, W. A., and Harter, L. L.—
Comparative Susceptibility of Sweet-potato Varieties to Stem Rot ... 915–919
Mottle Necrosis of Sweet Potates ... 893–914
Relation of Soil Temperature and Soil Moisture to the Infection of Sweet Potatoes by the Stem-rot Organisms ... 435–441
Transit Disease of Snap Beans Caused by *Pythium aphanidermatum* ... 443–447
Wildeman, E. de, work with *Achlyopsis entospora* ... 295–296
Willow, host of *Crytocampus angustus* Htg ... 755
Wilt—
plant, reviews of study ... 198, 223–224
soy-bean, caused by *Fusarium lycopersici* Sacc ... 227–232
sweet-potato. *See* Rot, stem.

Wilt—Continued. Page
Tomato—
Caused by *Fusarium lycopersici* Sacc., Studies: Richard P. White 197–239
distribution and damage 197
nature of poison causing 231–233
relation to toxic excretory products 223–233
resistance loss 198
resistance source 233
variations with locality 233

Woodroof—
J. G., and Woodroof, Naomi Chapman: Development of the Pecan Nut (*Hicoria pecan*) from Flower to Maturity 1049–1063
Naomi Chapman, and Woodroof, J. G.: Development of the Pecan Nut (*Hicoria pecan*) from Flower to Maturity 1049–1063

Woolly aphis. *See* Aphis.

Worms, removal— Page
effectiveness of santonin 839–845
from foxes by tetrachlorethylene 129–136
with carbon bisulphide 844

Yeasts, function in sauerkraut fermentation 81
Yellow Rust. *See* Rust, yellow.
Yolo, resistance to kernel smut 830
York, Harlan H., Snell, Walter H., and Rathbun-Gravatt, Annie: Results of Inoculating *Pinus strobus* with Sporidia of *Cronartium ribicola* 497–510

Zea mays. *See* Corn.
Zeller, S. M.—
Canker of Apple and Pear Trees Caused by *Glutinium macrosporum*, n. sp. 489–496
Rust, Yellow, of Raspberry, Caused by *Phragmidium imitans* 857–863